TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

Vol. 21.] 1924 [No. 8.

MALARIA.

PEREIRA (Miguel). **Formas clinicas da malaria (Trabalho posthumo).**—*Arch. Brasileiros de Med.* 1924. Jan.. Vol. 14. No. 1. pp. 1–32. With 1 plate & 8 graphs.

This posthumous paper, leaving a clinical record of malaria as existing in Brazil, will be welcome to those there practising. The details of the picture naturally correspond with those prevailing elsewhere. Benign tertian malaria, for instance, undergoes as a rule in Brazil rapid spontaneous or therapeutic "cure," but is subject to relapse and rarely ends fatally. Quartan malaria is perhaps entirely absent.* Subtertian malaria manifests but rarely pernicious attacks; such attacks being almost always formidable episodes in a primary and recent infection, but not always limited to subtertian malaria. The existence of acute apyretic or "larval" infection is emphasized.

Clayton Lane.

BOUFFARD. **Le paludisme en Émyrne. Étude prophylactique et thérapeutique.**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1923. Sept.–Oct.–Nov.–Dec. Vol. 21 [23 *sic*]. No. 3. pp. 282–323.

In Madagascar, malaria is caused by all three species of parasites, the quartan being predominant in many localities, at least from June to December, Prevention has been mainly by administration of quinine to children, apparently at school. It has proved disappointing. This is attributed to two factors: (1) The reservoir furnished by children of lower age and by adults; (2) the abundance of mosquitoes, mostly breeding in rice fields. It is consequently held that for Europeans there should be quinine prophylaxis for 7 to 12 months, according to locality; and for natives quinine for the infant reservoir in doses of not less than 30 cgm. or preferably 40 to 50 cgm. in children of two to six.

In acute cases the treatment recommended is 2 gm. daily by mouth for three or four days, and thereafter 65 cgm. every evening, for eight weeks. Yet on account of the amount of quinine required, and its expense, an alternative of intramuscular injection of 1 gm. of

* But see this *Bulletin*, Vol. 7, p. 97.

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quinine on three consecutive days is mentioned. Of 20 cases so treated three relapsed on the 30th day; in the others no parasites were detected in the cutaneous blood within 45 days, a finding which apparently applies to tertian malaria. For subtertian malaria with crescents, which is held synonymous with cachexia, the minimum treatment needed to cause disappearance of these is 1 gm. of quinine daily by intramuscular injection for a period variously stated as from 20 to 25 days, the gametes of tertian malaria disappearing under a daily dose of 25 cgm. daily for a week or two. It is mentioned, however, that where quinine prophylaxis was in use its effect on the parasite index was negligible. Splenic and parasite indices were found to be in correspondence. Other recommendations are :—the search in Madagascar for a site suitable for cinchona cultivation ; and the detection of those breeding-places which the anopheles specially favours. These are then scrupulously preserved for her convenience and her pestilent progeny periodically destroyed before pupation ends.

C. L.

BLASQUEZ BORES (F.). [**El paludismo en el ejercito y sul importancia social.** Malaria in the Spanish Army.]—*Thèse Méd.* Madrid. 1920.

ROMERA Y DOMINGO (J. A.). [**El paludismo en nuestra zona de influencia en Marruecos.** Malaria in the Spanish Zone in Morocco.]—*Los Progresos de la Clinica.* 1919. Nov. Vol. 7. pp. 228–234. With 1 map.

ROYO VILLANOVA (R.). [**La salud en el Ejercito de Africa. El Paludismo en Yebala y en el Rif.** Health of the Spanish Army in Africa. Malaria at Yabala and Rif.]—*Leçon d'ouverture de la chaire de médecine interne,* 1921–1922. *Saragosse.* 12 pp.

OJERO (J. P.), REDONDO (A.), BLANCO (J.), DELGADO (E.), CID (R. F.) & PALANCA. [**El paludismo de la zona del protectorado español en Marruecos y medios para combatirlo.** Malaria and its Prophylaxis in the Spanish Zone in Morocco.]—*Rapport de la Commission, Ministère de la guerre. Madrid,* 1921. 62 pp. With several maps.

[All summarized in *Bull. Inst. Pasteur.* 1924. Jan. 31. Vol. 22. No. 2. pp. 78–79.]

OBERLÉ & VIALATTE (Ch.). **Paludisme et lutte antipaludique dans les troupes d'occupation du Maroc.**—*Arch. Méd. et Pharm. Milit.* 1923. Nov. Vol. 79. No. 5. pp. 700–728. With 2 charts & 1 map. [15 refs.]

In 1917–18 a third of the Spanish army in Morocco was immobilized by malaria, some 11,000 men spending 318,310 days in hospital. A battalion of 890 men had 286 cases and 32 deaths in one year. It is held that 50 per cent. of the personnel of the army are infected with malaria in their first twelve months of service there. The Commission makes useful recommendations regarding propaganda, the establishment of an anti-malarial service, and, in addition to the usual preventive measures, the setting up in Morocco itself of convalescent sanatoria, with the refusal of convalescent leave out of the country after malaria.

In French Morocco admissions to hospital for malaria per thousand effectives fell from 83·9 in 1913 to 13·1 in 1919. The figure for 1922 was 24·6. Racial morbidity from this cause per thousand was 35·22 for Europeans, 11·66 for indigenous races and 1·97

for negroes. Quartan malaria is most rare ; the other two kinds vary, not with locality but with season. The not infrequent occurrence, in those taking prophylactic quinine, of such symptoms as anaemia and vomiting, the *paludisme camouflé* of RIEUX, is emphasized, as is the difficulty of ensuring disinfestation out of hospital.

Prophylaxis is based on a medical administration and executive which combine in the same individuals both civil and military charges, forcing them to take a wide view-point. Of the value of preventive quinine the writers are convinced, but it is not clear whether the controls, in the striking experiences mentioned, were of the same race as those taking quinine. The prophylactic daily dose used was 40 cgm. of the hydrochloride ; its expense in 1922 amounted to 1,200,000 francs. It is noted that a daily issue of quinine entails a daily survey of each man, and that the evasive attitude of these is in contrast with the behaviour of the "colonial," whose daily dose of quinine is scrupulously swallowed.

C. L.

BOREL (P.) & MAIRE (G. L. E.). **Étude sur le paludisme dans les territoires de la 2e division de l'armée française du Levant.**—*Arch. Méd. et Pharm. Milit.* 1923. Nov. Vol. 79. No. 5. pp. 729–752. With 4 plates & 1 map.

In the Levant, *Plasmodium falciparum* is much more frequent than *P. vivax*, at least from November to January ; yet, apart from cases admitted moribund, no deaths occurred within this period. The only feasible prophylactic measure of general applicability is the administration of quinine. Having seen three deaths from its administration intramuscularly, out of hospital, the authors hold this method absolutely contraindicated unless carried out with the most scrupulous asepsis. Intravenous quinine is advocated when the five hours' delay of action entailed in oral administration has to be avoided. Sensitiveness to oral quinine is held so rare as to be negligible, the effects of malaria being too frequently attributed to the drug. The dose advised is 3 gm. of the hydrochloride daily except, say, Sundays, continued for four weeks in infection with *Plasmodium vivax*, and for 12 in that with *P. falciparum*.

C. L.

i. YOUNG (T. C. McCombie). **Notes on Malaria in Shillong.**—*Indian Med. Gaz.* 1924. Mar. Vol. 59. No. 3. pp. 117–119.

ii. SHORTT (H. E.). **The Occurrence of Malaria in a Hill Station.**—*Indian Jl. Med. Res.* 1924. Jan. Vol. 11. No. 3. pp. 771–789. With 5 charts. 2 plates & 1 sketch map.

i. The Director of Public Health, Assam, notes that Shillong, its Hill Capital, is almost certainly producing autochthonous malaria. Of the local anopheles with interest other than entomological *A. gigas* breeds in clear rocky pools from October till March, at which time the temperature prevailing is probably insufficiently high for the growth of Plasmodium. A few *A. aitkeni* appear at the end of the cold weather, but in April or May larvae of *A. maculatus* appear in isolated rock-bound sandy pools out of which early rain will flush them. Thereafter oviposition is transferred to marshes fed by seepage from hill springs. Irrigation channels are not implicated. Contour drains along the valley sides at seepage level are advised, central drains being strictly avoided.

ii. Shortt's paper contains further valuable details about malaria in Shillong. For the six years 1917 to 1922 investigated cases showed *Plasmodium vivax* in 175, *P. falciparum* in 202, *P. malariae* in 38, *P. tenue* in 2, mixed infections in 9. In years of highest incidence *P. falciparum* infection was also highest. August was the worst month. All these cases are not held to be indigenous.

C. L.

i. Bulletin des Volkskommissariats für Gesundheitswesen. 1923. Oct. 15. No. 20.—[**Malaria und Malariabekämpfung in Russland.** Malaria and its Control in Russia.] [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Apr. Vol. 28. No. 4. pp. 168–169.]

ii. Ioff (I.) & Boschenko (W.). **Die Malaria in den Bezirken Dergatschy und Novousensk. II. Mitteilung Frühling 1923.**—*Rev. Microbiol. et Épidémiol.* Saratov. 1923. Vol. 2. Nos. 3–4. In Russian pp. 85–88. German summary, pp. 110–111.

iii. Marzinowsky, Schukow & Ssutschkowa. [**Malaria und Malariabekämpfung bei den Torfarbeiterern in den Schatursümpfen.** Malaria and its Control among the Peat Workers in the Shatur Peat Hag.] 1923. Moscow. [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Apr. Vol. 28. No. 4. pp. 169–170.]

i. In Armavir 90 per cent. of the inhabitants are ill of malaria, in Kasan cases have increased in one year from four thousand to forty thousand. In Ukraine a quarter of a million persons fell ill in the first seven and a half months of the year. In Dagestan the mortality was 17 per cent. In Turkestan the morbidity was over 90. The influence of the famine and consequent migration (this *Bulletin*, Vol. 20, p. 557) are mentioned.

ii. The districts of Dergatschy and Novousensk, over the Volga, had in 1922–23 a malarial morbidity of 64·6 per cent., representing an infection of 150,000 persons, and a splenic index in children of 30. The percentages of subtertian, tertian, quartan and mixed infections were in autumn, 86·6, 15·1, 3·5 and 5, and in spring 15, 85·2, 7·6 and 7·8 respectively.

iii. Among the peat workers in the regions of Moscow, Rjäsan and Wladimir (this *Bulletin*, Vol. 20, p. 961), 26·3 per cent. were proved malarial, 20·3 per cent. showing their first manifestation in winter and spring, starving migrants being again responsible. Nearly all the cases were of *Plasmodium vivax*.

C. L.

Stephens (J. W. W.). **Duration of Infection in Malaria.** [Miscellanea.] —*Ann. Trop. Med. & Parasit.* 1924. Apr. 30. Vol. 18. No. 1. p. 127.

A quartan malaria with latency in England for 5 years and a benign tertian case with similar latency for at least 23 months are reported.

C. L.

François–Dainville (E.). **Sur un cas de paludisme autochtone, à forme tierce bénigne, dans la région de Créances, Canton de Lessay (Manche).** —*Rev. Méd. et d'Hyg. Trop.* 1924. Mar. Vol. 16. No. 3. pp. 86–89. With 1 chart. [3 refs.]

A woman of 41 who had never left France fell ill while living at Creances, on marshy ground near Cherbourg, a spot at which colonial troops from that town spent leave. Benign tertian malaria was clinically and microscopically established. In the discussion a number of autochthonous cases occurring in Flanders and Normandy were mentioned.

C. L.

TRIMBLE (C. G.). **A Case of Congenital Malaria.**—*China Med. Jl.* 1924. Feb. Vol. 38. No. 2. pp. 121–123. [3 refs.]

A primipara experienced during the 8th and 9th months severe attacks of "malaria" and was treated with two grains of quinine every hour during the day, a daily total of 20 to 30 grains, for 3 days. The fever recurred in two or three weeks, the last on the day before delivery at full term. Quinine was given during the first fortnight of the puerperium and seemed to result in sterilization. The child kept good health for ten days, then became out of sorts, the temperature rose on alternate days, and when the blood was examined on its 21st day "malarial parasites, asexual" were found in large numbers. The writer says, "Perhaps the infection may have been transmitted to the infant by the bites of mosquitoes," and a little later "Parasites were doubtless in the blood stream when the child was born."

C. L.

DAVID (J.) & SÉGAL (J.). **Parasitisme intestinal et paludisme chronique.** —*Presse Méd.* 1924. Mar. 19. Vol. 32. No. 23. pp. 249–250.

Why, of malaria infections under identical conditions, do some only become chronic? It is not due to persistence of gametes, for men can be degametized and yet relapse. It is not due to climate, which affects all equally. Some influence nocuous to erythrocytes is the reasonable explanation. It was found that in 52 chronic malarials the percentage harbouring intestinal parasites was 92, 80 per cent. harbouring *Trichuris trichiura*, while in 24 non-malarials, the corresponding percentages were 25 and 25. Diagnosis was by smear or by flotation with a 30 per cent. solution of common salt. The essential features of the stool concentration in the saline and of the method of removal of ova for examination are not mentioned. No ankylostome ova were found. May it not be possible that since trichuris is a blood feeder, and nematodes secrete toxins, under their influence erythrocytes may become vulnerable to, and more suitable for the development of plasmodia; and that there will be so induced both liability to and chronicity of malaria?

[Inability to agree with the particulars of the authors' argument does not entail non-concurrence with their hope that the matter will be further investigated.]

C. L.

CHRISTOPHERS (S. R.) & KHAZAN CHAND. **Measurement in Centimetres of the Enlarged Spleen in Children and its Correction for Size of Child by a Factor based on an Anthropometric Measurement.** —*Indian Jl. Med. Res.* 1924. Apr. Vol. 11. No. 4. pp. 1065–1080. With 1 chart. [3 refs.]

CHRISTOPHERS (S. R.). **The Shape and Position of the Palpable Portion of the Enlarged Spleen in Children.**—*Ibid.* pp. 1081–1102. With 5 figs. & 4 charts. [2 refs.]

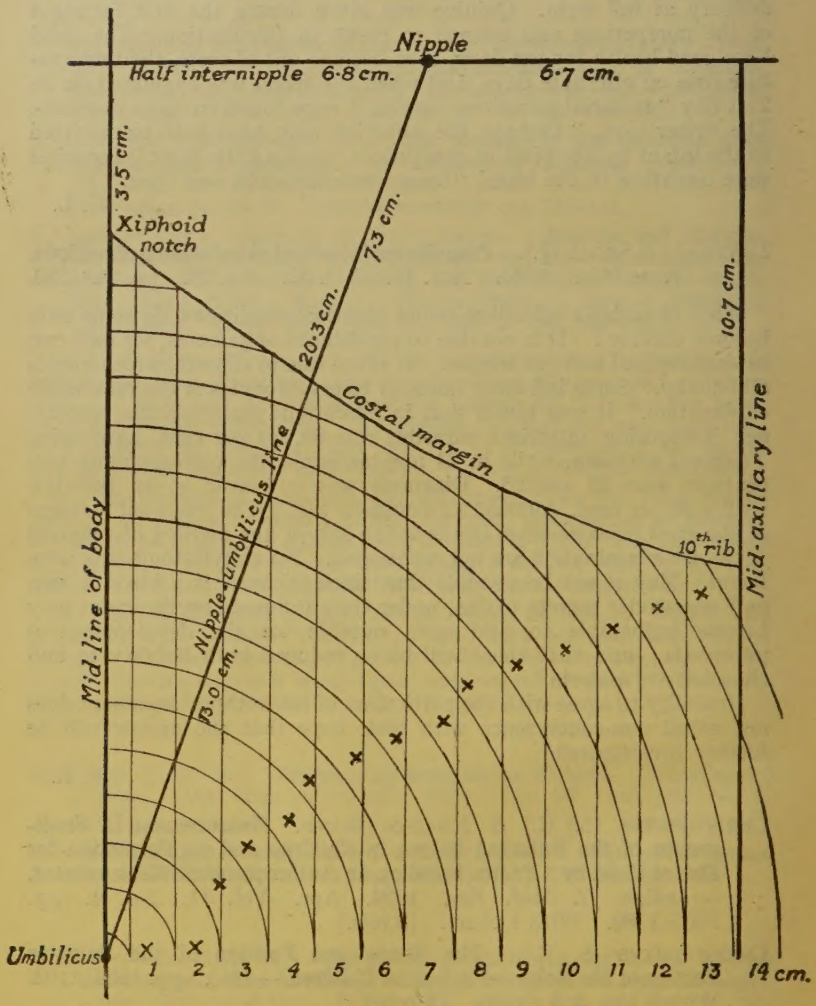
——. **The Frequency Distribution of Measurements of the Enlarged Spleen in a Malarious Child Community.**—*Ibid.* pp. 1245–1252. With 4 figs. [1 ref.]

It will be remembered that the Fourth Congress of the Far Eastern Association of Tropical Medicine (this *Bulletin*, vol. 20, p. 551) appointed a Committee to decide upon the best means for international use of

measuring the amount of splenic enlargement. The Committee decided that no known method could be advised as altogether satisfactory. Further investigation on the matter is here reported. It

STANDARD ABDOMINAL CHART.

[⅔rds actual size.]



The circles give distances of 0·5, 1·5, 2·5, etc. cms. from the umbilicus, the straight lines similar distances from the median line of the body. The centre of each space, therefore, corresponds to a whole number measurement in cms. from the spleen apex to the umbilicus and from the apex to the median line of the body respectively.

The crosses indicate the normal route of the apex of the enlarging spleen, as shown by the means of 188 measurements.

[Adapted from Charts I, III and IV (pp. 1099, 1101 and 1102) illustrating CHRISTOPHER'S paper in the *Indian Journal of Medical Research*, 1924, April.]

deals with children only. It was first established that measurement in centimetres of the palpable portion of the spleen was practicable in the field, and could readily, by means of tables, be corrected for the size of the child; one with a sitting height of 60 cm. being taken as the standard or mean. Further, this correction was automatically made, and the mean automatically reached, if the community were large and homogeneous. It was felt, however, that, should a correction be required, it was more fitting that an abdominal organ should be corrected by a factor concerning the abdomen more directly than does the sitting height, and the nipple-umbilicus line is recommended as probably the best indicator measurement for ordinary purposes. Acceptance of the length of spleen palpable as an index of splenic enlargement involves the implication that the relative positions of spleen and costal margin are invariable. This was negatived by the Standard Abdominal Chart, that of a child with a sitting height of 60 cm., made thus: A vertical line represents the mid-line. On it mark the navel and xiphoid cartilage and fix the site of the nipples by their position on the inter-mammary line, the point of intersection of this and the mid-line being easily determined. Draw the mid-axillary line and the left nipple-umbilicus line. Note the position of the costal margin on the mid-line, nipple-umbilicus line and mid-axillary line, and draw it in with convexity downwards. Mapping on such a chart the degree of emergence of the splenic apex from the costal margin resulted in confusion, which disappeared when the position of the splenic apex was charted according to its distance from the navel. It is accordingly advised that the position of the splenic apex should be determined by 2 measurements, the radial distance from the navel and the horizontal distance from the mid-line, a sort of triangulation which fixes its position absolutely, and is all that is needful for the individual. To facilitate correlation of all the findings of a community there are added to the chart concentric circles round the umbilicus and lines parallel to the mid-line, each 1 cm. apart, the first circle and line being, however, only half a centimetre distant from navel and mid-line respectively. The centre of each diamond-shaped space so formed represents the corresponding position of the splenic apex, and a mark made within this area permits, rapidly and without confusion, of large correlations. It is found that but rarely does the splenic index fail to maintain its normal route.

Having regard, however, to the rarity with which the splenic apex deviates during enlargement from the normal route, it will suffice, in estimating the malarial incidence of a community, to use only one of these measurements, to mark on a standard malarial chart (upon which is indicated the tract of the apex of the enlarging spleen) a point on that track determined by one only of these measurements, the same measurement being, of course, always used unless correction is to be made. The malarial condition of a community will then be recorded by two figures, the spleen rate, and the size index; the greater the degree of enlargement and the shorter the distance of the splenic apex from, say, the umbilicus, the smaller will be the size index figure. Thus:—

	Spleen rate.	Size index.
Singhbum	72 ...	9·9
Nalbari	94 ...	7·3

C. L.

BOYD (Mark F.). **Splenomegaly in Malaria from an Epidemiological Viewpoint. A Review.**—*Amer. Jl. Trop. Med.* 1924. Jan. Vol. 4. No. 1. pp. 49–67. [22 refs.]

This review of literature on splenomegaly necessarily consists largely of material already noted in this *Bulletin.* In addition to the largely quoted observation of ROSS, PERRY & CHRISTOPHERS (this *Bulletin,* Vol. 3, p. 259) that the spleen rate of London school children was found to be 1·07 is mentioned that less known one by DARLING & BARBER (*Report of the Uncinariasis Commission to the Orient,* 1915–1917. International Health Board, 1920), that in Fiji where malaria is not endemic the spleen rate is 1·5.

C. L.

BÉDIER (E.), LAURENCY & BAURY. **Index endémique du paludisme à Niamey à la fin de la saison des pluies.**—*Bull. Soc. Path. Exot.* 1924. Apr. 9. Vol. 17. No. 4. pp. 327–329. [4 refs.]

At Niamey, the new capital of French Nigeria, the parasite index in 135 slides in October (the epidemic season) varies in different spots from 38·4 to 100, with a mean of 66·6, that of Zinder, the old capital, being 68·8. Of observed infections 58 were *Plasmodium falciparum,* 27 *P. malariae,* and 3 *P. vivax* ; 2 were mixed infection of the first two. The splenic index was lower than the parasite index, enlarged spleen being most common with *P. malariae.*

C. L.

WALRAVENS (P.). **Index malarien chez des enfants quininisés pendant trois mois.**—*Ann. Soc. Belge de Méd. Trop.* Brussels. 1924. Jan. Vol. 3. No. 3. pp. 257–260. (Discussion pp. 260–262.) [1 ref.]

It has not proved possible clearly to follow these experiments with quinine at Elizabethville, Belgian Congo, but it is obvious that 75 per cent. of those concerned received, if between 1 and 5 years of age, 75 cgm. of " quinine " daily for three days, and thereafter 10 cgm. daily for 3 months ; if between 5 and 10, one gm. and 20 cgm. respectively ; and if over 10, one and a half gm. and 30 cgm. The other 25 per cent. had the same initial doses for two days only and thereafter the same daily dosage as the first series. At the beginning of the course the spleen-rate in 2 schools was 77·5 and 35·3, at the end 21 and 4 respectively. Dr. VALCKE, in discussion, suggested that logic was forcing the daily administration of a curative dose for preventive purposes.

C. L.

ADAM (M.). **Le paludisme, à la consultation des nourrissons indigènes de Dakar.**—*Bull. Soc. Path. Exot.* 1924. Mar. 12. Vol. 17. No. 3. pp. 279–282.

During the period from 1st December, 1922, to 1st December, 1923, the Dakar crèche attended 7,637 children, of which 17·41 per cent. suffered from clinical evidences of malaria, the worst percentages being 31·78, 27·72, 28·5 and 32·25 for August, September, October, and November respectively. In these same months the parasite indices of 100 apparently healthy children, showing no other evidences of

malaria, were 82·81, 70·17, 88·09 and 90·36 respectively. The conclusion that the real infection rate of children under 3 must be practically 100 is not unreasonable. High dosage of quinine for these children is advised, as instanced by a girl of 3 with high fever and convulsions who received in 4 days 5·5 gm. of quinine, namely 1 gm. intramuscularly on day 1, 1½ gms. intramuscularly on day 2, and 1½ gm. by mouth on day 3 and day 4, without toxic symptoms. For disinfestation a three months' course is advised, apparently arbitrarily, 0·2, 0·15 and 0·1 gm. daily being given orally for each respective month. The cost of 13 gm. of quinine for each child at its present local price is prohibitive. The Algerian procedure of the sale of State quinine is urged.

C. L.

VIVIANI (Rodolfo) & MARTINELLI (Giuseppe). **Studio sull' andamento dell' infezione malarica nel periodo interepidemico 1922–1923 in una zona del delta del Po (Po di Goro).** [Malarial Infection in an Interepidemic Period in the Po Delta.]—*Policlinico*. Sez. Med. 1924. May 1. Vol. 31. No. 5. pp. 268–279. [9 refs.]

Of 106 school children in good health, aged from 6 to 10, examined presumably in thin smear, in December, January, March and May, the percentages found infected were respectively 42, 20, 28 and 39. From 83 to 95 per cent. of these showed schizonts, although without fever.

C. L.

SINTON (J. A.) & BAILY (J. D.). **The Occurrence of "Acidosis" in Cases of Malarial Fever.**—*Indian Jl. Med. Res.* 1924. Apr. Vol. 11. No. 4. pp. 1051–1056. [14 refs.]

The most practical clinical test for acidosis is held to be that of SELLARDS, namely, the administration of bicarbonate of soda in fixed doses at stated intervals, and the noting of the time required to render the urine alkaline to litmus. By giving at once 4 gm. well diluted orally, an hour later 2 gm., and thereafter 2 gm. every half hour, with water copiously between, the urine being passed and tested before the due time for the next dose, it was found that the average amount of the salt required in 53 normal Indians to produce alkalinity was 6·5 gm. In 22 cases of infection with *Plasmodium vivax* it was 13·9 gm. and in 100 with *P. falciparum* 14·5 gm. There is then an acidosis in malaria. None of these cases showed serious symptoms.

C. L.

BOULAY (A.) & BÉDIER (E.). **Accès pernicieux et azotémie.**—*Bull. Soc. Path. Exot.* 1924. Mar. 12. Vol. 17. No. 3. pp. 282–284. [2 refs.]

Following up the work of BENHAMOU and others (this *Bulletin*, vol· 19, p. 291) the writers report 4 fatal cases of malaria with coma. In the first the serum-urea and urine-urea were 2·6 and 5·9 gm. per litre; in the second no urine was passed in 12 hours, the serum urea-content being 1·08; in the third the urine contained albumin and casts and the serum-urea content was 4·23; in the 4th the urea-content of the serum was 2·4, of the cerebro-spinal fluid 2·12, and the grammes of albumin in the urine per litre 0·4. It is concluded that malarial coma is often uraemic and should be treated as such.

C. L.

LICHTENSTEIN (Ladislaus). **Malaria und Gelenksrheumatismus.** [Malaria and Articular Rheumatism.]—*Wien. Klin. Woch.* 1924. Mar. 27. Vol. 37. No. 13. pp. 315–316. [4 refs.]

In 3 cases articular rheumatism appeared during acute malarial attacks, and in 18 during convalescence. All three species of parasite were involved. Quinine caused their disappearance, but neither it nor salicylates had any effect on the joints. Endocarditis existed in one case. It is concluded that malarial rheumatism is being dealt with, the possibility of concomitant venereal disease not being discussed.

C. L.

WALKER (J.). **Ein Beitrag zur Kasuistik des Malariaexanthems.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Apr. Vol. 28. No. 4. pp. 165–167.

Over the whole body an exanthem appeared consisting of flat reddish-brown roseolar patches; the spleen was enlarged, the tertian parasite present; the exanthem disappeared rapidly under quinine.

C. L.

YO GEN KAN. **On Two Cases of Purpura arising during the Progress of Malaria.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1924. Jan. No. 232. p. 4.

Two cases are reported in which petechial haemorrhages and bleeding from gums, nose, and intestine were attributed to malaria of one or two years' standing. In one case benign tertian parasites were found; in the other none of any kind, the diagnosis being made clinically.

C. L.

MACRAE (Donald Mackenzie). **Observations on Benign Tertian Malaria: Its Incidence, Sequelae and Treatment.**—*S. African Med. Rec.* 1924. Feb. 9. Vol. 22. No. 3. pp. 43–44.

A former communication dealt with tropical neurasthenia (this *Bulletin*, Vol. 20, p. 967), which the writer would seem to hold practically synonymous with malaria. He now writes, "No one is really healthy in a malarial country. . . . . From the disease no one is exempt at any time. . . . . At fifty few people of long residence retain their natural vigour and capacity. . . . . Malaria is a devitalising disease fraught with consequences which outlast actual residence to all."

C. L.

ACTON (Hugh W.) & KNOWLES (R.). **On a Standard Treatment for Malaria.**—*Indian Med. Gaz.* 1924. Apr. Vol. 59. No. 4. pp. 177–184. With 1 chart & 1 fig. [11 refs.]

This paper is in part an historic survey, in part a statement of personally held conclusions. Quinidine, as tested both experimentally against *Paramoecium caudatum*, and clinically in malaria, is held to be the most powerfully antimalarial alkaloid of cinchona; and cinchonidine, following JAMES, the weakest. Administration should be continuous over three or four weeks; timed so that it reaches the blood stream when this is most alkaline, which is, in cats, two and a half hours after a meal; and combined with alkalies. Cinchona febrifuge costs less than a third the price of quinine, and the Indian preparation

is rich in quinidine (this *Bulletin*, vol. 20, p. 301). The treatment advised on this basis is

Pulv. cinchonae febrifug.	.. .. ..	gr. x
Acid. citric.	.. ..	gr. xx
Mag. sulph.	.. ..	gr. xxx
Extract. glycerrhiz. liq.	.. ..	ʒ j
Spirit. chloroform.	.. ..	m. x
Aq.	.. .. ad	℥ j

Such a dose is advised two and a half hours after food three times a day for 7 days and thereafter twice a day for 24 days. It is suggested that those practising in hill stations where malaria cannot be acquired should give this treatment a critical test.

Quinine intramuscularly is held to be followed invariably in rabbits by local necrosis, and, if the solution be acid, acute haemorrhage. "In man the same changes always follow." The dangers of intravenous quinine are held greatly exaggerated, they are convinced; and they advocate its administration in 7½–10 grain doses of the acid hydrobromide in 15 to 20 cc. of sterile saline. "About 90 per cent. of the quinine injected intravenously disappears from the blood into the tissues within one minute. During that minute, however, the physician knows that the quinine is present in the circulation in maximum concentration and that its full destructive effort is being exerted upon such parasites as have not reached the 'safe area' within the erythrocytes."

C. L.

MANSON-BAHR (Philip). **The Treatment of Malaria as met with in English Practice.**—*Lancet.* 1924. Mar. 8. pp. 509–510.

For the benefit of those without tropical experience certain well-known points are emphasized, such as the frequent absence of parasites from the peripheral blood at non-paroxysmal times and the not invariable presence of anaemia and palpable spleen.

The treatment advised is ten grains of quinine hydrochloride with two minims of dilute hydrobromic acid solution three times a day for a week, twenty grains daily for the second week, and ten grains for the next two and a half months. It is advised that the sulphate should be avoided, and that a saline purge should be administered once or twice a week with a view to promoting easy absorption. The salvarsans, 0·3 gm. intravenously once or twice a week, are held useful in preventing relapse. The subtertian parasite responds more quickly to quinine than does the tertian and does not as a rule relapse. With very numerous parasites and severe clinical symptoms injection of 7 to 10 grains of the bihydrochloride deep into the gluteus is advised, intravenous injection being retained for comatous or cerebral types.

C. L.

CANTLIE (N.) & MOUBARAK (El Sach Yusef Effendi). **Preliminary Observations on the Treatment of 1,314 Cases of Malaria by the Intravenous Injection of Quinine.**—*Jl. Trop. Med. & Hyg.* 1924. Feb. 15. Vol. 27. No. 4. pp. 37–39.

In July 1922 Khartoum suffered more than its total average annual rainfall; August was more than equally lavish. Flooding and epidemic malaria followed. Relapse occurred in 42·5 per cent. of cases, the

figures in subtertian being almost as high as in tertian malaria. This being attributed to insufficient treatment, each patient was given an intravenous injection of nine grains of quinine bihydrochloride daily until the temperature reached normal as well as two ten-grain doses of the bisulphate also daily. When fever ceased oral administration was increased to thirty grains daily, and after discharge from hospital lessened to ten grains daily for a month. In 1,231 illnesses 2,484 intravenous injections were given, each occupying from 30 to 45 seconds of actual injection time. The pulse was accelerated 5 to 17 beats a minute for not more than three minutes. Tingling, especially of the mouth, ringing in the ears, occasional constriction of the chest with one or two coughs, sometimes vomiting, on two occasions fainting occurred. Against these disadvantages are claimed simplicity, rapidity, powerful action, barbarity minimized, stay in hospital shortened.

C. L.

DIXSON (T. Storie). **A Consideration of Certain Points in the Pathology of Malaria with Consequent Suggestions as to its Treatment.**—*Med. Jl. Australia.* 1924. Jan. 19. 11th Year. Vol. 1. No. 3. pp. 61–63. [7 refs.]

The treatment advised is 3 to 4 grains of quinine hydrochloride in uncoated pill form with three or four ounces of water, four times a day, for two months, and one grain of calomel at night, and a saline draught next morning for a week or two. Whether or not the cases were microscopically diagnosed is unstated.

C. L.

CORDES (Wilhelm). **Ueber den therapeutischen Wert des Cinchonins bei Malaria tropica.** [Therapeutic Value of Cinchonine in Malaria tropica.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Mar. Vol. 28. No. 3. pp. 120–123. With 2 charts. [9 refs.]

Working under NOCHT and using three half-gramme doses of cinchonine hydrochloride daily, the writer found that ring forms were apt to persist longer and to return more rapidly to the circulation than under the use of five fifth-gramme doses of quinine hydrochloride. Appreciation of the work done on this subject outside Germany is evident.

C. L.

CHOPRA (R. N.), KNOWLES (R.) & GUPTA (J. C.). **On the Failure of *Vitex peduncularis* in the Treatment of Malaria.**—*Indian Med. Gaz.* 1924. Mar. Vol. 59. No. 3. pp. 133–135. With 8 figs. [3 refs.]

Infusion of leaves of *Vitex peduncularis* (this *Bulletin*, Vol. 17, p. 306), supplied to the writers by the courtesy of Col. VAUGHAN at the season when their medicinal efficacy is held to be greatest, was tested in 12 cases, 4 of benign tertian, 6 of subtertian and 3 of quartan malaria (one being a mixed infection). It produced no effect at all upon the malaria parasites whose daily course was noted in blood films. Quinine had to be given, sometimes urgently, to correct symptoms.

C. L.

RUBASCHKIN. [**Vergleichende Bewertung verschiedener Behandlungsmethoden der Malaria mit Chinin.** Comparative Value of Various Methods of Quinine Treatment in Malaria.]—*Kub. Nautschno-Med. Westnik.* 1923. No. 1–4. [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Apr. Vol. 28. No. 4. p. 171.]

From observation of 600 cases of malaria, of type unstated in the German abstract, it is concluded that in malaria it is immaterial what kind of quinine treatment is used, the dosage having no relation to the rapidity of cure. After 10 to 15 injections 25 per cent. of relapses occurred. Oral combined with subcutanous quinine is advised.

C. L.

DE BUEN (Sadi). **El tratamiento como medida profilactica en la lucha antipaludica.**—*Rev. Méd. de Barcelona.* 1924. Apr. Year 1. Vol. 1. No. 4. pp. 328–342. With 5 figs. [39 refs.]

This paper with its considerable reference to literature other than Spanish must prove valuable in that country. Some cases cited are held to show quinine resistance, evidenced in most cases by persistence of gametes, but without evidence offered of quinine absorption. No case of abortion from quinine has been noted nor any haemoglobinuria. Tertian malaria has relapsed in spite of ten injections of neosalvarsan.

C. L.

BRAHMACHARI (U. N.). **The Difficulties in the Treatment of Malaria and how to combat them.**—*Calcutta Med. Jl.* 1924. Feb. Vol. 18. No. 8. pp. 599–614.

This paper deals mainly with the writer's antihaemolytic treatment and the question of fall in blood-pressure after intravenous injection of quinine (this *Bulletin,* Vol. 18, p. 339 & Vol. 19, p. 864).

C. L.

WOLOGIN & MOREV. [**Treatment of Malaria by Intravenous Injection of Tartar Emetic.**]—*Russian Jl. Trop. Med.* Moscow. 1924. No. 2. pp. 65–68. [In Russian.]

The authors employed a 2 per cent. solution of tartar emetic in doses of 3 to 7 cc., injected intravenously, in 104 cases of benign tertian fever. The best result was obtained by administering the drug from one to three hours before the attack; in 38 cases thus treated the paroxysms ceased in 100 per cent. (52·6 after the first injection, 31·6 after the second, and 15·8 per cent. after the third). In 66 cases treated in other stages of the fever the results were less satisfactory: in 25 per cent. there was response only after the fourth injection, and in some cases after the sixth, while there was none at all in 10 per cent.; relapses occurred in 30 per cent. of the series of 66 cases. The action of the drug on the parasites could be established microscopically. In four cases a quotidian fever was reduced to a simple tertian by the action of tartar emetic, *i.e.*, one generation of the parasite was destroyed.

C. A. Hoare.

LJACHOWEZKI (A. M.). [**Combined Treatment of Malaria by Intravenous Injections of Methylene-Blue and Neosalvarsan.**]—*Russian Jl. Trop. Med.* Moscow. 1924. No. 2. pp. 3–10. [13 refs.]. [In Russian.]

In this paper are recorded the results of combined treatment of malaria by APPEL'S method (this *Bulletin.* Vol. 11, p. 29). Among the 53 cases thus treated, the majority were suffering from chronic

malaria contracted in the Caucasus or in Bokhara, many of them having been treated unsuccessfully with quinine, and some (8 per cent.). showing an idiosyncrasy towards this drug. All cases were of the benign tertian type, but associated with *P. falciparum* in several, and in one with *P. malariae*. The usual course of treatment was to inject methylene blue (0·2 gm. in 10 cc. aq.) two days in succession, and neosalvarsan (0·45 gm.) four hours after the last dose of the dye; 10 to 12 days later the procedure was repeated. Generally, the parasites disappeared from the peripheral blood 6–8 hours after injection of salvarsan, the spleen and liver diminished to normal dimensions after the second series of injections, and the general condition of the patients improved considerably. Relapses were observed in 18 per cent. of cases as compared with 100 per cent. in cases treated by other methods in the same clinic.

C. A. Hoare.

AVIDON (H.). **Traitement de la malaria par la diurotropineiodobenzométhylée.**—*Ann. Soc. Belge de Méd. Trop.* Brussels. 1924. Jan. Vol. 3. No. 3. pp. 347–352.

Septicaemine is a combination of iodine 33 per cent. with urotropine and benzomethyl. It is given intravenously, intramuscular and subcutaneous injection being very painful. The dosage used is not stated. Results are held to be encouraging.

C. L.

JAARVERSLAG DER MALARIACOMMISSIE VOOR NOORDHOLLAND OVER 1923. [Report on the North Holland Malaria Commission for 1923.] (Uitgebracht aan den Minister van Arbeid, Handel en Nijverheid.) [ALDERSHOFF (H.), Chairman, KORTEWEG (P. C.), Secretary.]—31 pp. With 1 graph. 1924.

Abstracts of previous reports appeared in this *Bulletin* (Vol. 19, pp. 282 and 855 and Vol. 20, p. 962). Some additional new lines of investigation have been pursued. The percentage of female *Anopheles maculatus* found containing blood in the winter months varied in barns from 8 to 12, in animal-houses from 18 to 25, and in dwellings from 5 to 16, the facts supplying further evidence that anopheles feed in winter and that they pass from place to place, since barns are uninhabited. For larval destruction paraffin was spread on water at the rate of from 3·3 to 4 gm. per square metre, but it is felt that in Holland winter destruction of adult females is the most practicable line of attack. Pigsties and stables harbour in Holland more anopheles than do cattle or goat stalls. In the 44 animal-houses which yielded more than 50 anopheles each, the average number caught was 5,600. The percentage of persons giving infected smears has fallen, perhaps an uncertain means of comparison since only those suspected were examined; but at the same time the amount of quinine demanded in various places has fallen steadily, as has the number of reported cases. The United States Standard Treatment is now issued in Holland. Reference is made to CREMONESE's fantastic recommendation of mercury as a cure for malaria (this *Bulletin*, Vol. 15, p. 126), it now transpiring that a letter received by the President of the Dutch Commission from CREMONESE states that his cure takes a super-sabbatical rest from May to September. A crafty mosquito gaining surreptitious access to an experimental Chara tank produced therein a lusty batch

of larvae. Reference is made to a visit of SWELLENGREBEL to Italy under the *Echange entre personnels sanitaires à activité spéciale* (*lutte antimalarique*), and to that of JAMES to Holland which had happy results.

C. L.

WALCH (E. W.). **De *M. sinensis* als gevaarlijke overbrenger, (een sawah-epidemie).** [*M. sinensis* as a Dangerous Carrier (A Sawah Epidemic).]—*Geneesk. Tijsdchr. v. Nederl.-Indië.* 1924. Vol. 64. No. 1. pp. 1–27. With 5 figs. [English Summary pp. 26–27.] [9 refs.]

Two malaria epidemics have occurred within four years, the insect host concerned being *Anopheles sinensis* alone in one, but accompanied in the other by other species. The percentage of infection discovered establishes a record for the species, namely 20 per cent. over a period of two weeks and 12 per cent. over three months in 3,600 females dissected. The variety *vanus* was present. A treatment of 8 to 12 weeks, given as associated with the names of ROSS and BASS, is approved. Properly supervised treatment was effective. Buffaloes were adequate counter-attractions to man, provided they were presented to the anopheles in the proportion of at least 1 to 20. So proportioned, there were caught on two buffaloes 1,026 mosquitoes in two months, hardly any being caught in adjacent houses. The starting of rice culture where such a mosquito as *A. sinensis* exists is deprecated except under medical supervision.

C. L.

STRICKLAND (C.). **Malaria on Ambootia Tea Estate near Kurseong and the Success of some Anti-Malarial Operations.**—*Indian Med. Gaz.* 1924. Mar. Vol. 59. No. 3. pp. 119–121. With 7 charts. [4 refs.]

Lying in the Eastern Himalayas at about 3,000 feet altitude, with porous soil consisting of decomposed micaceous granite, this Estate was held, on consideration of the relations of malaria to rainfall, to owe its malaria to the swamp-breeders *Anopheles willmori*, *A. maculatus* and *A. aitkeni*. Drainage of swamps and training of streams has been followed by reduction of the malaria rate.

C. L.

HECKENROTH (F.). **A propos des vœux de la Société Medico-chirurgicale relatifs à la lutte antipaludéenne à Dakar.**—*Bull. Soc. Path. Exot.* 1924. Jan. 9. Vol. 17. No. 1. pp. 103–104.

Under the Law, and apart from epidemics, executive hygienic action can take effect only after judicial proof of disregard of the regulations, and can even then be subjected to vexatious delays here pointed out. It is suggested that the regulations may be so altered that evasion by delay may be shortened.

C. L.

FOUCAR (F. H.). **Malaria Survey in a Citizens' Military Training Camp.**—*Milit. Surgeon.* 1924. May. Vol. 54. No. 5. pp. 542–544. With 1 chart in text.

A Kansas regiment in which no malaria had been detected was in camp with two other infected regiments. Two cases occurred in the Kansas regiment, and 13 more in the other two.

C. L.

CATANEI (A.). **Essai critique sur la morphologie des parasites du paludisme.** — *Arch. Inst. Pasteur d' Algérie.* 1923. Vol. 1. No. 1. pp. 10–108. With 3 plates. [59 refs.]

Most of the facts here concerned have already been considered (this *Bulletin*, Vol. 19, p. 575). The conclusions now formed are that the text-book descriptions of the three ordinary forms are not sufficiently elastic, that there occur in each case nonconforming individuals, and that *Plasmodium africanum*, *P. tenue*, *P. caucasicum* and *P. minutum* represent aggregations of these transition forms. It will be remembered that the man was infected with all three types of malaria, and it is now affirmed that *P. tenue* stages are to be attributed both to *P. vivax* and *P. falciparum*. Morphological variations of the parasites are held to be determined by variations in the blood, and by the absence of quinine treatment; so that the curious conclusion, to which this particular leaning towards the unicity theory must lead, is that it is quinine which keeps the three common forms of parasite true to type.

C. L.

STEPHENS (J. W. W.). **Some Morphological Features of** *Plasmodium falciparum.*— *Ann. Trop. Med. & Parasit.* 1924. Apr. 30. Vol. 18. No. 1. pp. 33–35. With 2 plates.

It is impossible to consider this paper satisfactorily apart from its plates, which in the copy seen are incorrectly numbered. They illustrate many anomalous forms occurring in films from a West African case. They are classed in the paper as those with a cytoplasmic connection between adjacent parasites, those with a similar nuclear connection, symmetrical parasites in double corpuscular infections, and miscellaneous forms.

C. L.

HUCK (John G.) & BOWDEN (David T.). **On the Peculiar Morphology of a Malarial Parasite in a Case of Chronic Malaria in the Temperate Zone.**— *Bull. Johns Hopkins Hospital.* 1924. Apr. Vol. 35. No. 398. pp. 122–126. With 2 plates & 1 chart. [6 refs.]

This paper invites study side by side with that of Stephens. The preparations are from a Maryland negro after receiving his sixth injection of 0·4 gm. of arsphenamin (presumably neosalvarsan) for syphilis, and show these forms :—

About two hours after the chill small rings, occupying a quarter to a half of the corpuscle, rarely vacuoled (?), multiple infection not uncommon : 29 hours after the chill rings filling two-fifths to a half of the corpuscle, chromatin of all shapes occurring and a vacuole being very distinct : 20 to 30 hours after the chill, rings, described as resembling " those seen in infection with *P. malariae* except that the protoplasm was much less narrow and smaller in amount." In the figured specimens it would be better described as a fine lash lying across the corpuscle. Crescents, too, were present in all smears.

C. L.

PEREKROPOW (G.). **Polymorphismus der Parasiten Malariae tertianae. Ueber quartanaähnliche Tertianaparasiten.** — *Rev. Microbiol. et Épidémiol.* Saratov. 1923. Vol. 2. Nos. 3–4. In Russian pp. 71–73. With 1 plate. [6 refs.] German summary p. 108.

Cases occurring in Kazan in 1922–23 showed peculiar forms of *Plasmodium vivax*, resembling the schizonts of quartan malaria as described in one of the textbooks. One may perhaps conclude therefrom the writer's experience has not included personal acquaintance with these forms. Division is described as chaotic. Judging by the summary, the possibility of double infection has not been considered.

C. L.

DARGEIN & LANCELIN. **Un cas d'accès pernicieux palustre.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1924. May 22. Year 40. 3rd Ser. Vol. 48. No. 17. pp. 702–707.

A pernicious attack of malaria was accompanied by some *Plasmodium falciparum* in the cutaneous circulation. It cleared up under an intramuscular quinine treatment of unstated intensity. Three weeks later an ordinary frank tertian malaria supervened with *P. vivax* present. Reinfection at Toulon is to be dismissed. It is suggested that the brutal climatic change from Senegal to France in winter produced an artificial seasonal alteration in the parasite.

C. L.

STEPHENS (J. W. W.) & GORDON (R. M.). **The Relative Number of Male and Female Crescents.**—*Ann. Trop. Med. & Parasit.* 1924. Apr. 30. Vol. 18. No. 1. pp. 55–59. [2 refs.]

KNOWLES having given the proportions of male and female crescents as 1 to 10, and ABRAMI and SENEVET as 1 to 1·2 and 1 to 2·3 in two series, Stephens and Gordon examined 10,000 crescents from one case and 1,000 from another and found it to be 1 to 3 in both series.

C. L.

BLACKLOCK (B.) & ADLER (S.). **A Malaria Parasite of the Chimpanzee.**—*Ann. Trop. Med. & Parasit.* 1924. Apr. 30. Vol. 18. No. 1. pp. 1–2. [4 refs.]

A male chimpanzee, three months old, negative to malaria by repeated examinations over six weeks, was injected with 3 cc. of citrated human blood, heavily infected with *Plasmodium falciparum*, two hours and a half after withdrawal. Infection did not follow. In conjunction with BLACKLOCK and ADLER's failure to infect two Europeans from the infected chimpanzee (this *Bulletin*, Vol. 19, p. 588), this is held proof that the forms in the two hosts represent different species, and that of the chimpanzee is designated *Plasmodium reichenowi*.

C. L.

FRONTICELLI (Enrico). **La reazione della uroeritrina per la diagnosi differenziale fra tifo e malaria.**—*Policlinico.* Sez. Prat. 1924. Mar. 10. Vol. 31. No. 10. pp. 313–314.

Two to three cc. of a 5 per cent. solution of neutral acetate of lead added to 5 or 6 cc. of urine containing uroerythrin throw down a rosy precipitate. A white or yellow precipitate does not indicate uroerythrin. The rose colour has always been markedly evident in malaria during fever, absent or very slight in typhoid. In view of the facility of the test compared with the Widal reaction or with the detection of parasites, publication is now made.

C. L.

BALLERSTEDT. **Das Verhalten des Urobilins bei Malaria.** [Behaviour of Urobilin in Malaria.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Mar. Vol. 28. No. 3. pp. 100–119. [26 refs.]

Excretion of urobilin in urine and faeces runs, in fresh infections, parallel with their severity, lasts for some time, and lessens in staircase fashion. More is excreted by bowel than by kidney. In three latent cases, parasites

being present, urobilin was absent, On the other hand, light grades of urobilinuria, without other symptoms, are not evidence of malaria. Neither the species of parasite concerned nor quinine treatment has any appreciable influence on the excretion of urobilin.

C. L.

LIGNAC (G. O. E.). **Over haemoglobinogene pigmenten, het malaria-pigment in het bijzonder.** [On Haemoglobinogenous Pigments, the Malaria Pigment in Particular.]—*Nederl. Tijdschr. v. Geneesk.* 1923. Dec. 22. Year 67. 2nd Half. No. 25. pp. 2671–2676. With 1 plate. [19 refs.]

Discussion of the various pigments probably derived from haemoglobin, notably of haemosiderin, haematoidin and malarial pigment. One of the most constant characters of these pigments, but not invariably present, is the presence of iron, easily demonstrable in haemosiderin because fixed as an ion, but with more difficulty in haematoidin because directly fixed to an organic radical without ionization. Haematoidin, moreover, may contain calcium. Identity or close relationship with bilirubin is supposed to exist, although not proven, whereas the differences from haematoporphyrin are emphasized in that haematoporphyrin and metals form very complex compounds, the metal being strongly fixed, while in haematoidin or bilirubin, this is not so.

In malaria pigment the difficulty is to show with certainty the presence of iron within the grains of pigment. BROWN and SEYGARTH'S method of demonstrating its presence around the grains in the act of being dissolved by ammonium sulphide is held insufficient: the reaction (production of Berlin or Turnbull blue) should take place *inside* the granule. This has been accomplished by Edmund MAYER, who is therefore considered to be the first to demonstrate with certainty the presence of iron in malaria pigment. Lignac has tried, unsuccessfully, to reproduce MAYER'S reaction. Without disputing the correctness of the statement, he draws attention to the fact that two of the components necessary for the reaction, viz., potassium ferrocyanide and hydrochloric acid, if remaining too long in contact with each other, will produce Prussian blue without any extraneous iron being present.

Without being able to determine how the malarial pigment disappears from the internal organs, the writer draws attention to the fact, that in a spleen, slate-coloured by the pigment of the subtertian parasite, the ischaemic-necrotic portions are almost free of pigment, which may be due to decolorizing or dissolving influences; also to the fact that the hepatic cells and the malpighian corpuscles never, or almost never, contain malarial pigment.

N. H. Swellengrebel.

VAN NITSEN (R.) & MORTIAUX (C.). **De la valeur de la formule leucocytaire dans la malaria.**—*Ann. Soc. Belge de Méd. Trop.* Brussels. 1924. Jan. Vol. 3. No. 3. pp. 241–251. With 8 text figs. [18 refs.]

—— & ——. **Traitement de la malaria contrôlé par la formule leucocytaire.**—*Ibid.* pp. 253–255. [4 refs.]

Owing to the impossibility of determining by a smear from the cutaneous blood whether malaria has been cured the writers have closely examined the leucocyte formula. A polymorph leucocytosis

is confirmed as a feature of an acute attack, and a monocytosis, intensified by quinine, of the ensuing period. But of the mononuclear leucocytes the writers pin their faith on the "transitionals"—larger than the largest polynuclear with horse shoe nuclei, plump, faintly staining. These in Katanga vary in newly arrived non-infected persons from 1 to 5 per cent., in malaria cases they have a mean of 10 to 15 with minima and maxima of 7 and 20. Applying this formula to the results of the American Standard Treatment in 117 cases, 39 per cent. returned to a normal leucocytic formula in 6 weeks, and 91 per cent. in 8 weeks. For the rest the treatment had sometimes to be continued for four and a half months. All those treated also with hectine returned to normal in eight weeks.

C. L.

MEO-COLOMBO (Isabella). **La monocitosi nella malaria.**—*Policlinico.* Sez. Med. 1924. May 1. Vol. 31. No. 5. pp. 255–268. [21 refs.]

The writer describes examinations of ear blood from 9 cases of malaria, one fatal. It is concluded that the number of mononuclears is unaffected by massage of the ear, is increased in subtertian and double tertian infections, augmented during the access and by the administration of quinine, may reach 40 per cent. and is not related to the severity of the fever. These findings are in contradiction to those of LUCEY (this *Bulletin*, Vol. 19, p. 290).

C. L.

STUHLMANN (Walter). [**Die Sedimentierungsgeschwindigkeit der roten Blutkörperchen und im besonderen ihr Verhalten bei der Malaria.**] [The Rate of Sedimentation of the Erythrocytes more particularly as influenced by Malaria.]—1923. Hamburg: L. Friedrichsen & Co., 52 pp. [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Feb. Vol. 28. No. 2. pp. 76–77.]

The rate at which erythrocytes sink in citrated blood is accelerated in malaria, as in infectious diseases generally. The condition runs in general parallel to the temperature; it is lengthened by administration of quinine, whether this be continuous or intermittent. The drug has also a restraining influence on the bursting of erythrocytes.

C. L.

MIRONESCO (M.). **Démonstration au microscope de coupes de la peau et du nerf optique présentant des lésions et des parasites de la malaria.**—*Bull. et Mém. Soc. Méd. Hôpit. de Bucarest.* 1923. Oct. Vol. 5. No. 8. pp. 134–135.

Erythrocytes extravasated in the skin were not found infected, but the adjacent vessels and those of the optic nerve were packed with malarial parasites.

C. L.

PHOTAKIS (B. A.). **Pathologisch-anatomische Bemerkungen zur Diagnose mancher Formen der Malaria perniciosa.**—*Deut. Med. Woch.* 1924. Apr. 11. Vol. 50. No. 15. p. 465. [2 refs.]

Pathologically characteristic of malaria is a chocolate-brown or even black colouration of the marrow of the long bones, held evidential of regeneration of erythrocytes.

C. L.

HEINEMANN i. (H.). **Untersuchungen ueber den Liquor cerebrospinalis. I. Mitteilung. Der Liquor cerebrospinalis Malariakranker.** ii. **II. Mitteilung.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Jan. & May. Vol. 28. Nos. 1 & 5. pp. 26–32; 187–193.

i. Examination of cerebrospinal fluid from 106 Javans with subtertian, 27 with tertian, 4 with quartan, and 13 with chronic malaria and no parasites found, leads to the conclusion that malaria is not a source of error in the tests of Wassermann as modified by HAUPTMANN, and by the third modification of Meinicke's reaction, the blood in each case being taken during an attack.

ii. Investigation into these points in another 100 Javans confirms the first findings. These negative findings in 14 cases of definite implication of the nervous system lead to the conclusion that in these people malaria produces no alteration of the cerebrospinal fluid.

C.L.

BUSINCO (A.) & FOLTZ (P.). **Sifilide e malaria. Valore degli esami biologici.**—*Policlinico.* Sez. Med. 1924. May 1. Vol. 31. No. 5. pp. 245–255. [36 refs.]

Work on 19 cases of tertian, 22 of subtertian, 4 of quartan and 4 of chronic malaria without parasites leads to the conclusion that the biological methods of Wassermann, Sachs-Georgi and Meinicke (the first carried out with ox and guineapig heart, congenital syphilitic extract and malarial spleen) used for the diagnosis of syphilis have no useful place in the diagnosis of malaria. Weak deviation reactions found in 11 per cent. of malarias are held non-specific, and some 8 per cent. of febrile malarial sera are held autodeviant.

C. L.

MARCIALIS (G.). **La reazione di Wassermann e di Sachs-Georgi nella malaria.**—*Gazz. d. Osped. e d. Clin.* 1924. Jan. 27. Vol. 45. No. 4. pp. 75–80. [44 refs.]

In 225 cases investigated, comprising 44 tertian, 58 quartan, 71 subtertian and 52 in which no parasites were found (40 of these being classed as chronic malaria and 12 as malarial cachexia), it transpired that in apyrexial periods no Wassermann reaction was produced, but that during fever a slight reaction was occasionally detected, irrespective of the presence, kind, and number of parasites evident in the peripheral blood. The Sachs-Georgi reaction, using the thermostat, gave generally corresponding results. Injection of quinine, or its admixture in vitro, did not alter the reaction.

C. L.

MÜHLENS (P.). **Ueber Gefahren bei der Fieberbehandlung der Paralyse.** [Risks attending the Malarial Fever Treatment of Paralysis.]—*Klin. Woch.* 1923. Dec. 24. Vol. 2. No. 52. pp. 2340–2341. [3 refs.]

Professor Mühlens issues a very weighty warning regarding the care which must be exercised when a malarial strain is being initiated for the treatment of general paralysis. The Institute must be free from bugs, lice, and anopheles; injection is to be given only to strong individuals; before injection be satisfied that quinine agrees with

the individual; after injection examine the blood daily; give quinine immediately if the number of parasites become excessive, or if icterus or prostration supervene; do not let the patient leave the institution until he has been free from parasites for 3 or 4 weeks; use benign tertian only; in the making of a strain watch carefully for subtertian contamination.

C. L.

British Medical Journal. 1924. Mar. 15. p. 479.—**Treatment of General Paralysis by Malaria.** [**Statement by the Board of Control.**]

The circular letter notes that when direct inoculation with malaria was introduced into England it was hoped that the infection would be of a mild non-relapsing type with parasites so sparse that mosquito infection would not occur. It is suggested that the severity which has, in fact, characterized these inoculations with *Plasmodium vivax*, depends in part on its tropical source, in part on an increase instead of a decrease of virulence resulting from continued direct inoculation. [The literature does not now seem to support either of these conclusions]. Parasite relapses, it is stated, have occurred, and *Anopheles maculipennis* has been freely infected. Accordingly, Institution officers, and others concerned, are instructed that blood examinations must be made at least daily, so that mixed or excessive infections may be detected, that infected cases must be adequately screened, and that on their discharge from institutions the Medical Officer of Health must be notified.

C. L.

Mühlens (P.) & Kirschbaum (W.). **Weitere parasitologische Beobachtungen bei künstlichen Malariainfektionen von Paralytikern.** [Further Parasitological Observations on Artificial Malaria Infections in Paralytics.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Apr. Vol. 28. No. 4. pp. 131–144. With 5 figs. [7 refs.]

A summary of the writers' outstanding work. Infection can be carried by the intravenous injection of 0·5 to 2 cc. and by subcutaneous injection of 2 to 4 cc. of malarial blood. Next day a rise in temperature to 38·5° C. (101·3° F.) may occur. Malarial blood can be sent by post without any preservative (temperature 5° to 20° C.) and will yet be effective 24 hours after extraction. Drawn blood has produced infection after standing on ice at a temperature of 3° C. for 12 to 75 hours. Infection will not be transmitted by blood from leeches kept at 20° C. for 48 hours, nor by a blood and dextrose mixture kept for the same time at 37° C. It is necessary to ensure by constant microscopic control that a new strain is pure, and that any strain is under control. Death has followed omission of these precautions. Incubation is shortest after intravenous injection, lying generally between 3 and 12 days, in one quartan case, however, running to 50 days; but two patients injected at the same time with the same quantity of the same blood may have very varying incubation periods; moreover, a single tertian injected may result in a double tertian fever, and *vice versa.*

Fever is often irregular and subjective symptoms mild, though the multitude of parasites and of pigment, free and included, may demand

treatment. The spleen is usually not palpable unless in a reinfection. Blackwater fever has not been seen, but three cases have bled profusely from the bowel, two fatally. Throughout 40 direct passages from man to man, throughout collateral infections which raise the total infected to 183, and throughout all seasons from 1922 to 1924 the tertian strain used has remained loyally true to type, with no subservience to unicity. In subtertian cases sporulating and full-grown forms are commoner than in nature. Exflagellation occurred readily after the fortieth direct transfer, and gametes have appeared in all strains of all three parasites used.

In subtertian cases *tenue* forms have been found in many smears. Complete sterilization by quinine is in these cases rapid and easy; reinfection is difficult to produce and spontaneous cure has occurred. The treatment advised is 0·75 to 1 gm. of quinine daily for 3 to 5 days, the first dose being intramuscular, five days' pause and like doses two or three times daily for two consecutive days. Larger doses may do more harm than good. Tertian blood defibrinated and mixed with an equal quantity of a 1 in 5,000 solution of quinine hydrochloride is infective twelve hours later. If the strength of the quinine be doubled, infection is still possible after five hours. Quinine is accordingly held to act by some influence on the natural defensive mechanism.

C. L.

DATTNER (Bernhard) & KAUDERS (Otto). **Klinische und experimentelle Studien zur therapeutischen Impf-Malaria.** [Clinical and Experimental Studies on Therapeutical Infection with Malaria.] 1924. Leipzig & Vienna: Franz Deuticke. 39 pp.—[Reviewed in *Brit. Med. Jl.* 1924. Mar. 1. p. 392.]

Only vigorous patients are strong enough to stand the number of malarial attacks necessary to produce nervous improvement. Infection was ordinarily produced by subcutaneous injection of 2 to 4 cc. of blood, just withdrawn from the donor's vein, into the recipient's back, the remnant of blood being placed upon a scarification overlying the site of injection; intravenous and subcutaneous injections and scarification were each employed alone. Incubation periods were from 4 to 7 days after intravenous, 6 to 10 after subcutaneous injections, and 10 to 18 after scarification. The febrile attacks were milder and the detected parasites fewer than in anopheles-infected cases. Eight, ten, or, if possible, twelve, attacks were permitted, and might be complicated by vomiting, diarrhoea or jaundice. Splenic enlargement was usually absent. Cure was effected by 5 gm. of quinine sulphate spread over 7 days, namely 0·5 gm. twice daily for 3 days and then once daily for 4 more days. Six weekly salvarsan injections were also given for their reputed antimalarial action.

C. L.

HERRMANN (G.). **Jahresbericht ueber die Malariabehandlung der progressiven Paralyse an der Deutschen Psychiatrischen Klinik in Prag im Jahre 1923.** [Malarial Treatment of G. P. in Prague.]—*Med. Klin.* 1924. Apr. 6. Vol. 20. No. 14. pp. 445–448. [7 refs.]

Infection was presumably by *Plasmodium vivax.* It was passed in direct descent by injection through 20 persons. Its virulence greatly increased in the 19th and 20th passage, axillary temperatures running

to 41·5° C. (106·7° F.), excruciating pains, vomiting, and, in one case collapse, occurring, so that quinine had to be administered prematurely. The drug's extreme efficacy is noted. In one case 0·5 gm. caused temporary cure, observation being cut short in 6 days by the institution of NOCHT's regime. In another instance 0·25 gm. gave remission for 8 days. In 3 cases fever spontaneously disappeared; irrespective of this two of them were given Nocht's cure; the third, untreated, remained clinically cured during an observed term of 4 months. In one case vision was lost under malaria and was recovered under quinine. In a tabetic case gangrene of the toes ensued during the fever and ceased under quinine.

C. L.

REDLICH (Emil). **Ueber larvierte Malaria nach Malariabehandlung bei progressiver Paralyse nebst Bemerkungen ueber einen möglichen Zusammenhang zwischen Epilepsie und Malaria.** [Masked Malaria after Malarial Treatment of G. P.]—*Wien. Klin. Woch.* 1924. Feb. 7. Vol. 37. No. 6. pp. 134–138. [13 refs.]

A woman of 49 with general paralysis was injected with tertian malaria, and had her first rigor 7 days later. Five more followed on alternate days. During fever she became delirious or unconscious, the temperature reaching 41·2°C. (106·2°F.). She was then treated with 5 gm. of quinine sulphate, namely half a gram twice daily for 3 days and once a day for 4, with a single injection of 0·3 gm. of neosalvarsan. A cataleptic condition appearing on alternate days, blood examination was made and rings discovered. This constitutes the first occasion on which these small doses have failed to cure injected malaria in this clinic. The possible causal relationship of malaria towards epilepsy is discussed.

C. L.

GERSTMANN (Josef). **Ueber den jetzigen Stand der Malariatherapie der progressiven Paralyse, mit besonderer Berücksichtigung neuerer Erfahrungen.**—*Ztschr. f. d. ges. Neurol. u. Psychiat.* 1923. Vol. 81. pp. 255–262. [4 refs.]

This paper considers the matter essentially from the neurologist's aspect. In benign tertian malaria conveyed by injection, quinine in unstated doses produced complete and lasting cure. Passages through 58 men produced no alteration in the virulence, incubation period, or type of fever.

C. L.

UNTERSTEINER (Raimund). **Erfahrungen ueber die Malariabehandlung der progressiven Paralyse.**—*Wien. Klin. Woch.* 1924. May 15. Vol. 37. No. 20. pp. 499–500.

SCHILDER (Paul). **Zur Psychologie und Klinik malariabehandelter Paralysen.**—*Ibid.* pp. 500–501.

These papers have little interest for the malariologist. It is noted in the first that after subcutaneous infection the incubation period varied from 2 to 14 days with an average of 7. A temperature of 41°C. was reached. The first cases were frankly tertian, later ones anomalous. Two of 40 were infected only at the second injection. One died apparently as the result of the malaria, two others of sepsis subsequently acquired, with the impression left that malaria had hastened their ends.

C. L.

i. RUDOLF (G. de M.). **Malarial Treatment of General Paralysis.** [Correspondence.]—*Lancet.* 1924. June 7. p. 1183.

ii. SCHWARTZ. **Erkrankung eines Syphilitikers an Paralyse trotz überstandener Malaria.**—*Muench. Med. Woch.* 1924. May 9. Vol. 71. No. 19. p. 618.

iii. BERCOVITZ (Nathaniel). **Neurosyphilis and Malaria.** [Correspondence.]—*Jl. Amer. Med. Assoc.* 1924. May 24. Vol. 82. No. 21. pp. 1713–1714.

i. The need for the publication of pathological reports on patients who, improving after malarial injection for general paralysis of the insane, have died of some intercurrent disease is urged.

ii. About 15 years ago a man acquired syphilis. In August 1918 he became infected with tertian malaria. In October 1923 evidence of general paralysis of the insane became marked.

iii. Extensive experience in Hainan has proved the general infection with malaria, the coexistence of malaria and syphilis, and the remarkable absence of general paralysis and tabes.

C. L.

GRASSI (Battista); ROSS (Ronald); GRASSI (Battista). **The Transmission of Human Malaria.** [Correspondence.]—*Nature.* 1924. Mar. 1, 8 & 29. Vol. 113. Nos. 2835, 2836 & 2839. pp. 304–307; 353; 458. [2 refs.]

ECKSTEIN (Fritz). **Zur Entdeckungsgeschichte der Malaria. Eine historisch-entomologische Studie.** [History of the Malaria Transmission Discovery.]—*Zoologischen Anzeiger.* Vol. 58. 40 pp. [1 ref.]

The following quotations from the recently reopened discussion as to who proved the transmission of human malaria seem to contain the essentials of the matter.

Grassi in *Nature,* 1924, March 1, p. 305. "Before I published my 'Nota Preliminare' of September 29 [1898] Ross had discovered in the 'grey mosquito' the cycle of development of a parasite of sparrows (*Proteosoma grassii* Labbé), which I had previously shown to be very similar to the parasite of human malaria, and he had illustrated the subject in an extensive memoir. The indication of the sporozoites in the salivary glands was alone wanting; but even this was added by him a few days after the issue of my Nota preliminare (*i.e.* on October 11th, 1898). Naturally this fundamental discovery of Ross simplified the second part of my labour."

Ross, in his "Memoirs," p. 309. "Thus the great victory was won at last. It gave simultaneously two important advances in knowledge. *Zoologically,* the case of *Proteosoma relicta* was the first one in which the great law of Metaxeny or Alternation of Host was proved to apply to unicellular parasites. . . ." And again, p. 333, from a letter to MANSON, dated 31st October, 1898. "You must not trouble yourself in the least about obtaining confirmation of my mosquito work. Before another year has passed there will be dozens of workers all over the world. There is really no difficulty at all *except finding the right hosts* for each species of parasite."

Grassi and collaborators, in a preliminary note on the cultivation of malarial crescents of man in *A. claviger,* Fabr., presented to the Reale Accademia dei Lincei. 28th November, 1898. Translated in Ross's "Memoirs," p. 349. "As the first result of our researches we can announce that we have been able to follow with all certainty

certain phases of the development of the semilunar bodies in the thickness of the middle intestine of several *Anopheles claviger* kept at a favourable temperature, which we have made to suck the blood of individuals affected with the summer-autumn form of malaria. The most notable phases in question find a comparison in those discovered by Ross (2nd and 3rd day) for the proteosoma (haemamoeba) of birds."

Grassi, in *Nature*, 1st March, 1924. "By following in my own way I discovered—partly in collaboration with Bignami and Bastianelli—that Anopheles transmits human malaria."

C. L.

i. ADAM. **Au sujet de l'insolubilité de certains comprimés de quinine.**—*Bull. Soc. Path. Exot.* 1924. Jan. 9. Vol. 17. No. 1. p. 93.

ii. DE FREITAS (Otto Marques). **Um caso clinico de myelite aguda palustre curado com injecções de "Paludan."** [Correspondence.]—*Brazil-Medico.* 1924. May 10. Year 38. Vol. 1. No. 19. p. 269.

iii. MACARTHUR (W. P.). **Treatment of Malaria.** [Correspondence.]—*Jl. Roy. Army Med. Corps.* 1924. June. Vol. 42. No. 6. pp. 470–471.

iv. RUBASCHKIN. **[Jod und Jodchinin in der Therapie der Malaria.]**—*Wratschebnoje Djelo.* 1923. No. 3–5. [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Apr. Vol. 28. No. 4. p. 171.]

v. GALDI (Francesco). **Malaria e diabete.**—*Riforma Med.* 1923. Oct. 15. Vol. 39. No. 42. pp. 988–991. [18 refs.]

vi. URCHS (O.). **Zur Differentialdiagnose der Malaria.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Feb. Vol. 28. No. 2. pp. 71–73.

vii. YAGI (Kinnojo). **On the Necrotomy of a Case of Latent Malaria complicated by Salvarsan Toxicosis.**—*Taiwan Igakkai Zasshi.* (*Jl. Med. Assoc. Formosa*). 1924. Mar. No. 233. p. 7.

i. A European woman passed per anum during three weeks white bodies which proved to be tablets of quinine hydrochloride of 0·25 gm. each, one of which she had regularly been taking daily.

ii. An acute fever with intense spinal pains passing down to the lower limbs disappeared under treatment with Sedol and Paludan; threatened to return, and was mastered by the same treatment. The diagnosis was clinical. Paludan apparently contains quinine.

iii. A foreign, much vanted, proprietary pill analysed at the Royal Army Medical College contains acid sulphate of quinine some 60 per cent., citrate of iron 25 per cent. and arsenic, reckoned as oxide, 9·13 per cent.

iv. On experience of 20 cases these remedies are advised for malaria not yielding to quinine.

v. As diabetes may follow typhoid, influenza and other illnesses, so, it is held, may it follow malaria. It is noted that no figures can be offered on the matter.

vi. In a malarial country the condition of the spleen and blood must be determined before a diagnosis of perforated appendix is admissible.

vii. In one who had been free from attacks of malaria for seven years, a third injection of salvarsan (the total equalling 1·25 gm.) was followed by death from "neurorecidives" and encephalitis lethargica with post-mortem evidences (not specified in the abstract) accordant with death from malarial coma.

C. L.

ACQUA (C.). **Bonifichiamo le zone malariche col piantamento dei gelsi.**—*Bol. d. R. Stazione Sperim. d. Gelsicoltura e Bachicoltura d. Ascoli Piceno.* 1923. Oct. 1. Vol. 2. No. 5. pp. 236–239. [1 ref.]

BARDACHZI (F.). [**The Treatment of Chronic Malaria.**]—*Wien. Arch. f. inn. Med.* 1923. Oct. 20. p. 51. [Summarized in *Brit. Med. Jl.* 1924. Jan. 12. (Epitome) p. 5.]

BRAS DE SÁ (Luis José). **A profilaxia da malária na Velha Cidade.**—*Bol. Geral Med. e Farmacia.* Bastora. 1922. Jan.–Dec. 8th Ser. Nos. 1–12. pp. 6–7.

ESCOMEL (Edmundo). **A propósito tratamiento del paludismo. Trabajo presentado en la III. Conferencia Sud Americana de Patologia, Microbiologia e Higiene reunida en Montevideo.**—*Cronica Méd.* 1923. May. Vol. 40. No. 719. pp. 167–171.

GRANT (A. R.) & SILVERSTON (J. D.). **Malaria Therapy in General Paralysis of the Insane.**—*Lancet.* 1924. Mar. 15. pp. 540–543. With 4 charts. [2 refs.]

MARINESCO (G.) & DRAGANESCO (State). **Influence nocive du néosalvarsan sur les sujets atteints de syphilis et de malaria. Contribution à l'étude des lésions histologiques des centres nerveux dans la malaria comateuse.**—*C. R. Soc. Biol.* 1924. Mar. 21. Vol. 90. No. 10. pp. 707–711. With 1 fig [*ante* p. 301]. [3 refs.]

MARTINI (E.). **Ueber den augenblicklichen Stand der Malariaverbreitung in Deutschland, ihre Bedeutung und Prophylaxe.**—*Klin. Woch.* 1924. Jan. 1. Vol. 3. No.. 1. pp. 26–30. [55 refs.]

PONTANO (Tommaso). **Sulla riproduzione sperimentale della Malaria per mezzo dei gameti.**—*Policlinico.* Sez. Med. 1923. June 1. Vol. 30. No. 6. pp. 269–287. With 4 charts. [17 refs.] [See this *Bulletin*, Vol. 17, p. 298, and Vol. 20, p. 774.]

DE SEQUEIRA NAZARÉ (Francisco Xavier). **A proposito da epidemia palustre das Fontainhas.**—*Bol. Geral. Med. e Farmacia.* Bastora. 1922. Jan.–Dec. 8th Ser. Nos. 1–12. pp. 7–11.

VARGAS (Martinez). **Paludismo cronico en una niña. La quinina y el arsenico.**—*La Med. de los Niños.* Barcelona. 1922. June. Vol. 23. No. 270. pp. 161–163.

TROPICAL DERMATOLOGY.

OTA (Masao) & LANGERON (Maurice). **Nouvelle classification des dermatophytes.**—*Ann. Parasit. Humaine et Comparée.* Paris. 1923. Oct. Vol. 1. No. 4. pp. 305–336. With 8 figs. [43 refs.]

Comparative studies of some fifty species of dermatophytes from authentic sources, belonging to the five genera usually recognised, namely, *Trichophyton, Microsporum, Achorion, Endodermophyton,* and *Epidermophyton,* have recently been made by one of the authors. It is stated that the existing classification of the dermatophytes into these five genera is not based on their mycological characters so much as on the nature of the lesions which they produce and is, therefore, botanically unsound. Numerous examples are cited in support of this view, which is one with which most mycologists will agree. Thus, morphologically, the *Trichophyton gypseum* group is stated to be much more closely allied to *Microsporum* than to most other species of *Trichophyton* ; *Achorion annulosum* is nearer to *Trichophyton violaceum* than to *A. schönleini* ; *A. gypseum* resembles the animal species of *Microsporum* ; *Epidermophyton rubrum* is related to *T. gypseum* more nearly than to *E. cruris* ; and so on. In reality, no morphological characters of weight serve to differentiate the five genera as at present recognised : all have approximately similar mycelial and chlamydospore characters ; most have the peculiar type of lateral spore termed an " aleurie " by VUILLEMIN ; and even the fusiform, pluricellular spores, which are perhaps the most characteristic feature of certain species, have been discovered in more or less perfect shape by the authors in *Achorion schönleini* and other forms in which they were not previously known to occur.

It is concluded that the dermatophytes form a homogeneous group, which is classed amongst the Hyphomycetes without prejudice to the possibility of their being conidial stages of Gymnoascaceae. Indeed, in view of the known production of skin lesions of the ringworm type by one of the latter family, *Eidamella spinosa,* and the formation of Gymnoascaceous perithecia in *Trichophyton currii,* this latter possibility is worthy of all consideration. It is supported by the authors' statement that *Gymnoascus reesii* has aleuria and fusiform spores of the same nature as those of *Trichophyton,* as well as by the occurrence of denticulate and spirally-coiled hyphae in several of the conidial dermatophytes.

The morphological characters of the mycelium and organs of dissemination are clearly described and illustrated. The mycelium is colourless or tinted reddish or violet. As is well known it has little taxonomic value, forms similar to those figured being found in many different groups of fungi : even the " nodular organs," which the authors are inclined to regard as rudimentary attempts at perithecium-formation, have, perhaps, no more significance than the mycelial " bulbils " found in other groups. The same is true of the so-called *Endoconidium*-type of conidia and the " arthrospores," which are merely oidia, chlamydospores, and resting or budding cells of the mycelium, similar to those known in many fungi. Possibly too much attention has been paid to these structures in the dermatophytes as a whole, and it can serve no useful purpose to dwell on them. The main organs of reproduction are the aleuria—unicellular, lateral conidia said to be usually liberated by the dissolution of the stalks connecting them to the

hyphae—and the fusiform spores, regarded as pluricellular chlamydospores. One may be permitted to doubt whether any of these structures have the morphological value of true conidia or whether they are not all merely of chlamydospore rank.

In view of the absence of clearly marked spore characters it is obviously far from easy to divide the mass of the dermatophytes into separate genera. Nevertheless the authors unite them into a separate subfamily of the Hyphomycetes which they term Closterosporeae, and then proceed to a new subdivision into six genera. It would surely have been more logically in accordance with their own observations regarding the scantiness of distinguishing morphological characters within the group to have united all into a single genus. The subfamily itself has little to commend it except as defining the essential unity of the dermatophytes. Of the older genera three are retained in an amended form, *Trichophyton*, *Endodermophyton*, and *Epidermophyton*, with the loss of certain of their species transferred to the other genera. Three new genera are created for the remaining forms. *Sabouraudites* contains the species co-generic with *Microsporum audouini*, Gruby (1843), and should by all the laws of nomenclature retain GRUBY'S generic name, notwithstanding that subsequent species have been wrongly placed in the genus. *Grubyella* is based on the forms co-generic with *Achorion schönleini*, Lebert (1845), and is an equally unnecessary creation. *Bodinia* is based on the type *B. violacea* (*Trichophyton violaceum*, Bodin, 1902) and is characterised by the general absence of any spore forms other than arthrospores (chlamydospores) in chains, though aleuria of a rudimentary type are occasionally formed.

With the views expressed in the earlier part of this paper one can have nothing but agreement. In the revised classification offered, however, it would seem that a golden opportunity has been lost of giving concrete form to these views by abolishing the artificial distinctions between the genera of earlier writers. Such a course might have done something to check the genus- and species-mongering that is the bane of medical mycology.

E. J. Butler.

SABOURAUD (R.). **Sur la classification botanique des dermatophytes.**—*Ann. Parasit. Humaine et Comparée.* Paris. 1924. Apr. Vol. 2. No. 2. pp. 172–177.

Discussing the recently published classification of the dermatophytes by OTA and LANGERON [see above] Sabouraud expresses his complete agreement with the view that all these organisms are closely related to one another and form a homogeneous botanical group. He also agrees that previous classifications had no more than a provisional value, based chiefly on clinical expediency. He is unable to accept, however, the method proposed by the authors in order to establish the morphological characters of the various dermatophytes, namely, their culture on a single type medium. He argues very truly that in the case of organisms such as these, admittedly particular in their nutrient requirements and often difficult to obtain in a freely-sporing form, the choice of a single medium is scarcely likely always to yield cultures in a full state of morphological differentiation. For a true botanical classification the organisms should be studied in the most fully differentiated condition, that is to say under optimum conditions for growth and sporing. In the absence of any such attempt he prefers to adhere to the present clinical classifications. From his long experience of the

dermatophytes he has come to certain conclusions as to the botany of these fungi. He considers that the human species of *Microsporum*, the animal species of the same genus, and the microid species of *Trichophyton*, form three sub-genera, but that certain other dermatophytes, *e.g.*, *Epidermophyton inguinale*, seem to belong to a distinct genus though still within the close family circle of the group.

E. J. Butler.

LOMBARDO (C.). **Di una particolare colorazione vitale di alcune dermatomiceti.** [Vital Staining of Dermatomycetes.]—*Giorn. Ital. Malattie veneree e della pelle.* 1923. Vol. 64. No. 2. pp. 720–721.

Application of chrysarobin to conditions of dermatomycosis causes a fairly definite staining of the tissues in 24 hours, becoming more intense later. Sections, after being washed in benzol and cleared in cedar oil, show the protoplasm of the fungi coloured a deep brown, owing, it is said, to oxidizing ferments in the fungi themselves. The author suggests the use of this process both for demonstration and identification of dermatophyta.

H. Harold Scott.

DE MAGALHAES (Octavio). **Apropos des teignes observées au Rio Grande do Sul (Brésil),** *Microsporum circuluscentrum.*—*C.R. Soc. Biol.* 1924. Jan. 18. Vol. 90. No. 1. pp. 53–55. With 2 figs.

Report of a case of T. tonsurans occurring in a child aged 18 months. Microscopical examination revealed a fungus in sparse amount with the appearance and arrangement of a microsporum. The cultures showed a concentric ringed formation of white, yellow and ash-coloured growth arranged excentrically about a raised snow-white downy central portion, the whole culture having an external white rayed border. In some cultures the yellow tint predominated to resemble the culture of *M. fulvum*. The microscopical appearances of the cultured fungus are described ; the absence of " fuseaux " is emphasized.

W. Jenkins Oliver.

HORTA (Parreiras). **Uma nova tinha microsporica Brazileira.** *Microsporon Ramos*, **n. sp. (Nota previa).** [A New Species of Microsporon in Brazil].—*Brazil-Medico.* 1924. Feb. 2. Year 38. Vol. 1. No. 5. pp. 59–60.

Mention is made of three cases exhibiting a favus-like eruption of the hairy scalp, one of which was complicated by a pustular folliculitis. Growth of a microsporon was obtained on Sabouraud's saccharose medium. A yellow pigment was first produced in the culture and later a red pigment limited to the zone of growth and penetrating the medium. In some respects the organism resembled *M. ferrugineum*, but differed in the following points :—(1) The colour ; (2) *M. ferrugineum* shows no external spores, whereas they were abundant in the new species ; (3) Whereas *M. ferrugineum* resembles in culture *Achorion schönleini*, this resembles *M. equinum*. The author names the new species *M. Ramos* in honour of his colleague, Dr. João RAMOS E SILVA. A more detailed account with photographs is to appear later.

H. Harold Scott.

CARINI (A.). **Sur la dermatite verruqueuse.**—*Bull. Soc. Path. Exot.* 1924. Mar. 12. Vol. 17. No. 3. pp. 227–233. With 1 plate & 3 figs. [11 refs.]

Two cases of this dermatomycosis are reported from Brazil, of which the diagnosis of the first is based entirely on photographs of the affected area. The lesions of the second case were situated about the external malleolus and dorsum of the right foot, and consisted of papillomatous tumours raised 1–2 cm. above the skin surface covered with adherent thick crusts. Such papillomatous lesions, according to the patient, had developed from nodules of which type one was visible and was soft, fluctuating and contained pus. The affection dated from 16–17 years previously. All forms of treatment, including iodide of potassium, were without result. The pus on examination showed round and oval elements, 8–15μ in diameter, with a thick brown-coloured capsule. In addition there were distinguished occasional short mycelial filaments. Histologically the tumour resembled a granuloma with diffuse infiltration. The cultural characteristics are described. Probably the fungus had a saprophytic existence in the soil and became pathogenic through accidental inoculation of the skin. The fungus isolated from this case has not been identified. From previous cases reported two kinds of fungus had been denominated, *Phyalophora verrucosa* and *Acrotheca* respectively. The differential diagnosis is briefly discussed.

W. J. O.

LEÃO (A. E. Arêa). **Chromoblastomycose (Dermatite verrucosa mycotica. Observação de um novo caso).**—*Sciencia Medica.* Rio de Janeiro. 1923. Nov. 30. Vol. 1. No. 5. pp. 227–228. With 1 plate.

This is an account of a patient suffering from "Chromoblastomycosis" or verrucose dermatitis due to *Acrotheca pedrosoi*, differing from one previously recorded in which the condition was associated with dermal leishmaniasis.

A man, 63 years of age, resident for the past 15 years in S. Paulo, a labourer on the coffee plantations, where he worked barefoot: 12 years ago a single nodule developed on the left foot which increased from time to time till 3 years ago, when several fresh lesions appeared involving the whole foot, dorsal and plantar aspects, and the lower part of the leg. Each of these latter lesions was 1–3 cm. in diameter, with a distinct edge, raised, verrucose, crusted, reddish in colour, and exuding a blood-stained, sero-purulent discharge. One larger lesion, 10 cm. in diameter, was present on the outer aspect of the leg at the junction of the upper and middle thirds. The patient was unable to walk on account of the pain. Sections showed a growth of the fungus Acrotheca and giant cell formation, while cultures made from material obtained by puncture yielded a growth of the organism.

An excellent photograph of the condition is given.

H. Harold Scott.

ROJAS (Hector M.). **Sobre la verdadera naturaleza del llamado "pie musgoso."** [The True Nature of so-called "Mossy Foot."]—*Cronica Méd.* 1923. Nov. Vol. 40. No. 725. pp. 361–381. With 8 figs. [4 refs.]

The author, after reviewing the recorded history of this condition, gives an account of two patients under his own care and of some experimental work in connexion with the disease. Mossy-foot, he

states, is not a distinct morbid entity, but is an elephantoid condition of the skin, which may arise from one or more of several causes. In THOMAS's case, in which the affection was ascribed to leishmaniasis, he holds that two conditions—cutaneous leishmaniasis and the elephantoid skin lesion—were coexistent. He calls attention to the erroneous conclusions which may inadvertently be drawn from inoculation experiments in rabbits. Thus, in his experiments the inoculated animal remained well, whereas the control developed spontaneously a condition precisely similar to that previously reported as having occurred after inoculation of tissue from the human lesion.

H. Harold Scott.

PARDO-CASTELLO (V.) & DOMINGUEZ (M. Martinez). **Achromia Parasitaria.**—*Arch. Dermat. & Syph.* 1924. Jan. Vol. 9. No. 1. pp. 82–93. With 8 text figs. (Discussion pp. 93–95.)

The clinical histories of 12 out of 36 patients with an apparently contagious affection are very briefly reported. The skin lesions consisted of dirty-white slightly pruritic macules, roughly circular or oval in shape, with a pinkish and faintly scaling surface in the early stage, which become quite white and smooth. Most commonly observed in dark-skinned persons, though not entirely confined to negroes, the condition was found chiefly on the face and neck, and might develop rapidly. In those few cases showing a generalized distribution the palms and soles, hair, nails and mucous membranes had not been affected. The cultural and microscopical characteristics of a fungus obtained from the lesions (only in the early scaly stage) of six cases are described. All inoculation experiments were negative. Without being able to identify the fungus sufficiently for classification this was considered to resemble *Aspergillus flavus*. In the commentary on the differential diagnosis the very slight scaliness of these lesions is emphasized in comparison with those of other mycotic affections.

W. J. O.

TRUJILLO (Plascencio) & MORAL. [**Maduromicosis.**]—*An. de la Soc. Med. Quir. del Guayas.* 1923. No. 8. [Summarized in *Rev. Española de Med. Cirug.* 1924. Jan. Vol. 7. No. 67. p. 31.]

This is the first case of Maduromycosis recorded from Ecuador. A man of 40 years, a native of Colombia, had lived and worked for 18 years in Ecuador; he went about barefoot. For some years he had noticed on the upper surface of the right great toe a painless swelling the size of a grain of maize; more recently several similar nodules appeared and sinuses formed discharging bloodstained matter with whitish-yellow granules. The bones were invaded and much deformity resulted. A growth was obtained and the organism identified as belonging to the group *Indiella*.

H. Harold Scott.

GUICHARD (F.) & JAUSION (H.). **Un cas de pied de Madura observé à Marrakech.**—*Arch. Inst. Pasteur d' Algérie.* 1923. Dec. Vol. 1. No. 4. pp. 641–644. With 2 plates.

Case report of a female native aged 30 whose affection of the left foot had followed a thorn prick. The clinical appearance was that of an infection of *Discomyces Madurae*; laboratory examination showed the fungus to be of the white-grained variety. Amputation of the foot was performed.

W. J. O.

ANDERSON (Ch.) **Sur un douzième cas de pied de Madura observé en Tunisie.** —*Arch. Inst. Pasteur de Tunis.* 1924. Apr. Vol. 13. No. 1. pp. 68–70. With 1 text fig. [3 refs.]

Case report from the Sadiki hospital, concerning a male of Southern Tunis with an infection of the right foot of six years' duration. Amputation of the foot was performed. The fungus was isolated and classified with the genus *Madurella Tabarkae.*

W. J. O.

PAGENSTECHER (Gustav A.). **Third Case of Mycetoma.**—*Jl. Amer. Med. Assoc.* 1924. May 24. Vol. 82. No. 21. pp. 1692–1693. With 1 fig. [1 ref.]

Case report of a Mexican woman, aged 36, in whom the condition of 10 years' duration had followed an injury to the right ankle region. White granules were observable in the pus and showed many branching mycelial threads on microscopical examination. Amputation was performed. Early amputation is recommended in this infection.

W. J. O.

GOMES (J. M.). **Nocardiose de localização rara.**—*Ann. Paulist. Med. e Cirurg.* 1923. Nov. Year 11. Vol. 14. No. 11. pp. 150–156. With 1 text fig. [16 refs.]

A man of 53 years, a field labourer, had suffered for some ten years with an eczematous condition of the shoulders resulting from carrying sacks of coffee. A year ago small swellings occurred which burst and discharged pus and blood. Examination of the pus showed yellowish-white granules, some with radially arranged club-shaped bodies, others of a filamentous structure. An organism allied to, but distinct from, *Nocardia bovis* was obtained in culture and grew readily on most media. The differences from *N. bovis* consist in the facts that it liquefied gelatin very slowly, if at all, and that intraperitoneal inoculation in rats and guinea-pigs gave rise to no lesions, the fungus being absorbed and disappearing. It is suggested that infection arose from the custom of applying leaves of various plants as dressings to sites of local inflammation.

H. Harold Scott.

LORO (H. A. M.). **L'urticaire de l'iroko.**—*Arch. Méd. et Pharm. Nav.* 1924. Mar.-Apr. Vol. 114. No. 2. pp. 136–140.

Fifteen cases were observed, in the course of one month, of urticaria occurring in those who handled iroko wood from the Cameroons in saw-mills (Forges et Chantiers) on the Mediterranean. Dust collected from the bark of the trunks was shown to be composed of the spores and mycelium of a mould of which the morphology is being investigated. Two severe cases with fever showed considerable oedema and extreme pruritus especially marked about the hairy parts of the body, the eyebrows and eyelids, with conjunctivitis and balanitis and an appearance of the scrotum resembling elephantiasis, and signs of laryngitis. The hands were unaffected. All the remaining cases were able to continue at work with some slight oedema about the eyelids, prepuce and scrotum, and intense irritation. The preparatory cleansing of the bark by heat and washing in potassium permanganate solution is recommended, and prophylactic measures for the workers are described.

W. J. O.

MENDELSON (Ralph W.). **Keratoma Plantare Sulcatum.**—*Jl. Trop. Med. & Hyg.* 1924. Feb. 15. Vol. 27. No. 4. p. 39. With 1 fig.

Prolonged irritation and pressure are considered to be the causal factors of this affection, which is not uncommon in Siam, and this belief is strengthened by the distribution of the keratosis respectively in normal and flat-footed individuals. The characteristic punched-out holes following the detachment of the keratosic areas differentiate clinically this condition from tylosis, and the absence of framboesiform nodules and other lesions on the body from yaws.

W. J. O.

CORPUS (Teofilo). **A Survey of Ulcus Tropicum.**—*Jl. Amer. Med. Assoc.* 1924. Apr. 12. Vol. 82. No. 15. pp. 1192–1194. With 4 figs. [3 refs.]

The affection is most prevalent during the damp season, but is not common among those school children whose feet are covered. In 35·5 per cent. of the cases examined a positive finding of spirochaetes (Eggerts' Type A) was obtained, while almost all specimens showed streptococci and staphylococci considered to be secondary infections. With regard to the clinical appearance of the lesions "there is no particular feature about the diagnosis." Two methods of treatment are advocated—(1) local application of 3 per cent. solution arsphenamin, (2) bathing with 1 : 4000 solution potassium permanganate and dusting with Vincent's powder (1 part sodium hypochlorite with 9 parts acid boric).

W. J. O.

PAMPANA (E. J.). **A Note on the Treatment of Ulcus Tropicum.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. Nov. 15. Vol. 17. No. 5. pp. 331–333. [6 refs.]

Daily dressings of acriflavine solution 1 : 1000 are advocated. A positive experimental inoculation of pus from a typical lesion is reported.

W. J. O.

BOUFFARD (G.). **Gangrène de la lèvre supérieure et association fuso-spirochétienne.**—*Bull. Soc. Path. Exot.* 1923. Dec. 12. Vol. 16. No. 10. pp. 719–725. With 4 figs.

Two cases are reported and a general description of the condition is given. Commencing always on the inner aspect of the upper lip, more usually on the left side of the middle line, the gangrenous ulceration may spread rapidly to the cheeks but usually spares the buccal mucosa. The condition appears in healthy young children and thus, with its peculiar localization, is to be differentiated from noma. The infection is believed to be a primary one and it is possible that the infecting symbiotic organisms may live a saprophytic existence in the soil; the mode of infection is obscure. The writer has obtained very satisfactory healing results by the local application, 3–4 times daily, of a 4 per cent. novarsenobenzol solution in glycerine.

W. J. O.

RANDALL (Alexander). **Therapeutic Value of Two New Synthetic Antimony Compounds in Cases of Granuloma Inguinale.**—*Jl. Urol.* Baltimore. 1923. June. Vol. 9. pp. 491–504. With 3 figs. 4 refs.]

The empirical use of the synthetic antimony compounds (1) sodium antimony thioglycollate and (2) triamide of antimony thioglycollic acid gave uniformly good results in the treatment of 3 cases of granuloma inguinale reported; they appeared to be less toxic than tartar emetic while containing practically equivalent amounts of antimony.

W. J. O.

HORWITZ (H. L.). **Granuloma Inguinale.**—*Med. Jl. & Record.* New York. 1924. Feb. 20. Vol. 119. No. 4. (Whole No. 2275.) pp. 199–200. [10 refs.]

A short account of this affection is followed by the report of one case of 4 years' duration which reacted satisfactorily to specific tartar emetic medication

W. J. O.

i. DECROP & CRAMBES. **Un cas de nodosité juxtaarticulaire.**—*Maroc-Médical.* 1923. Apr. 15. No. 16. p. 117.

ii. REMLINGER (P.). **Note sur un cas de nodosités juxtaarticulaires observé à Tanger chez un Européen.**—*Ibid.* July 15. No. 19. p. 201.

iii. DEKESTER & MARTIN. **Seize cas de nodosités juxtaarticulaires chez des Marocains. La nodosité médio frontale. Étude anatomo-pathologique.**—*Ibid.* pp. 202–205. With 2 figs.

i. Brief case report of a woman, aged 35, with recent syphilis and nodules of 4 years' duration arranged for the most part symmetrically about the large joints. While anti-syphilitic (arsphenamin) treatment cleared away the mucous patches, this had no effect upon the juxtaarticular lesions.

ii. Case report of a Spaniard, aged 26, resident 4 years in Morocco, with one subcutaneous nodule about each elbow causing some pain on movement of these joints. The patient showed no signs of syphilis while he admitted having had several attacks of gonorrhoea. Anti-syphilitic treatment and excision of the nodules were refused.

iii. In the commentary on the sixteen cases very briefly reported the conclusion is drawn that the nodules in question, not necessarily in relation to the joints in every case, occur most frequently in syphilitic subjects as the result of repeated local friction over bony prominences, and are of a chronic inflammatory nature.

W. J. O.

BROUARD (M.). **Nouvelle observation de nodosités juxta-articulaires syphilitiques chez un européen.**—*Arch. Inst. Pasteur d'Algérie.* 1923. Dec. Vol. 1. No. 4. pp. 621–623. [8 refs.]

The histological appearances of the lesions occurring in symmetrical distribution in each retrotrochanteric region of a Spaniard aged 26 are described, from the military hospital at Colomb-Bechar. The Wassermann reaction was partially positive, while the history and clinical signs of venereal disease were negative. Previously to excision anti-syphilitic treatment had modified slightly one of the two lesions.

W. J. O.

GALLI-VALERIO (B.). i. **Haben die multiplen subkutanen harten fibrösen Geschwülste der Malaien einen Framboësia-Ursprung?** [Are the Multiple, Subcutaneous, Hard Fibrous Swellings of Malays of Framboesial Origin?]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. Nov. Vol. 27. No. 10. pp. 365–366. With 1 fig. [7 refs.]

ii. **Zur Ätiologie der multiplen subkutanen harten fibrösen Geschwülste der Malaien.**—*Ibid.* 1924. Apr. Vol. 28. No. 4. pp. 167–168. [3 refs.]

i. The purpose of this short article is to disprove the arguments of VAN DIJKE and OUDENDAL that the nodules in question have their origin in yaws. (See this *Bulletin*, Vol. 20, p. 288.) After examining numerous sections, in only one of which he had been able to find elements resembling spirochetal bodies, Galli-Valerio considers that the spirochetes figured by those writers most probably were merely fibrils of connective or elastic tissue, such as the alleged spirochetes reported by other observers in sections of certain other skin diseases.

ii. In this supplementary note to his previous communication acknowledgment is made of the recognition of a spirochete in one of OUDENDAL'S sections examined by the writer.

W. J. O.

SOBERNHEIM (G.). **Zur Ätiologie der multiplen Fibrome der Malayen.** [The Etiology of Multiple Fibromata among the Malayans.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Feb. Vol. 28. No. 2. pp. 73–75. With 3 figs. [12 refs.]

The microscopical examination of sections stained by the Levaditi silver impregnation method revealed definite spirochaetal bodies, which in the preparations so submitted to the writer could not be with certainty differentiated as *S. pallida* or *S. pertenuis*.

W. J. O.

ARNAUD. **Sur un cas d'Aïnhum chez un Marocain.**—*Maroc-Médical.* 1923. Mar. 15. No. 15. p. 85.

In the case reported the right small toe had been amputated by the disease before coming under the observation of the writer, while in the corresponding toe of the left foot the disease was actually in progress. The Wassermann reaction was negative and there were no signs of leprosy. The patient was the son of a Soudanese negro while his mother was a Moroccan. Attention is drawn to the rarity of diseases common to negroes among the Moroccans in spite of their frequent mixed parentage.

W. J. O.

QUIRK (E. J. J.). **A Case of Ainhum in the Hand.**—*Nigeria Ann. Med. & San. Rep. for the Year 1922.* pp. 23–24.

Case report of a male native, aged 25 years, in whom the little finger [no mention made of which hand] had been swollen and powerless for 2 years. No history of injury or previous disease was obtained. The extreme rarity of ainhum affecting the fingers is noted.

W. J. O.

PANJA (Ganapati). **Leukoderma.**—*Calcutta Med. Jl.* 1923. Nov. Vol. 18. No. 5. pp. 491–499. With 4 plates.

The writer's personal views concerning the formation of skin pigment are put forward to introduce some hypothetical explanations of the occurrence of leucoderma. Various clinical varieties are described. In this contribution to the study of the pathogenesis of skin depigmentation perhaps the most useful section is that in which the constituents of some advertised quack remedies for this peculiar skin condition are named.

[Many dermatologists will not agree with the writer's statement that melanoblasts are derived from the mesoderm and manufacture melanin in their position below the basal cell layer of the epidermis.]

W. J. O.

ARCHIBALD (R. G.). **An Unusual Case of Vitiligo in a Native of the Sudan.**—*Jl. Trop. Med. & Hyg.* 1923. Dec. 15. Vol. 26. No. 24. pp. 361–363. With 1 plate. [1 ref.]

Interesting case report of a male native of Northern Sudan in whom the depigmented patches of skin had been gradually making their appearance on the face, trunk and limbs over a period of three years, commencing on the lower lip. There was also patchy depigmentation of the hairs of the scalp, axillae and pubis. No etiological factor was determined. The blood pressure was low, the Wassermann reaction was negative and there were no signs of syphilis or leprosy. Following the loss of pigment on the back of the neck there had resulted considerable erythema from exposure to the sun, and the patient complained that he had felt the heat more readily than formerly. Sections of the depigmented skin showed hyaline degeneration and vacuolation of the rete mucosum in addition to much diminished pigment in the usual sites. The case was treated with liquor arsenicalis. In some four months' time fresh pigment had begun to appear in the leukodermic patches, especially about the hair follicles on exposed areas and more particularly on the hands and neck.

W. J. O.

DUGA. **Un curieux cas de dépigmentation généralisée chez un indigène de Tshamba circonscription de Garoua (Cameroun).**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1923. Sept.–Oct.–Nov.–Dec. Vol. 21 [23 *sic*]. No. 3. pp. 360–361.

Brief report of a male native, aged 61, whose entire skin, with the exception of a ring about the orbits and upon the scrotum, had become white since the age of 30 years. This depigmentation had progressed at intervals, each progression being accompanied by febrile attacks and itching. No cause was discovered. On palpation the dermis appeared thickened and suggested leprosy, which diagnosis was negatived by microscopical examination. One first cousin was a leper. One brother and one sister also showed loss of skin pigment but in a lesser degree.

W. J. O.

JAMIN (H.). **Dix-septième observation Tunisienne de Xeroderma pigmentosum.**—*Arch. Inst. Pasteur de Tunis.* 1924. Apr. Vol. 13. No. 1. pp. 129–132. With 1 plate.

Report of a typical case of Xeroderma pigmentosum occurring in a native girl, aged 10 years, showing considerable epitheliomatous ulceration of the nose. The exposed areas all showed characteristic lesions, while a moderate pruritus of the affected areas was a feature of this case. The condition had commenced at the age of three years. No family history of any similar skin trouble was obtained.

W. J. O.

GEORGELIN. **Note au sujet de deux cas de pseudo-myiase rampante (creeping disease—myiase linéaire, larbisch du Sénégal).**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1923. May–June–July–Aug. Vol. 21[22 *sic*]. .No. 2. pp. 182–186.

This paper is not much informative. In one case the shifting itchy red streaks, two or three cm. long and 1·5 mm. broad, appeared on the hands of an adult European a few days after he had been manipulating fresh turned soil. They continued to shift, to disappear and advance, and to itch, with a periodic intensity, for about six or seven months, and then they very gradually ameliorated until at the end of 14 months nothing could be seen or felt. They were implacable to treatment, but the local application of iodine seemed to stop their advance momentarily and to change its direction. Nothing of the nature of a parasite could be discovered. The second case occurred in the buttock, the patient being a half-caste infant; little is said beyond that microscopic examination did not reveal anything.

A. Alcock.

CLAPIER & GEORGELIN. **Un cas de "Larbisch" chez une européenne à Libreville (Gabon).**—*Bull. Soc. Path. Exot.* 1923. Nov. 14. Vol. 16. No. 9. pp. 665–668. With 1 fig.

An interesting item in this case of creeping disease, which otherwise is not remarkable, is the report of the examination of the blood, which certainly is suggestive. In the earliest stages the lymphocytes were reduced to 4 per cent. and the polymorphonuclear eosinophiles formed 30·6 per cent. After the disappearance of the lesions the percentage of lymphocytes was 30·5 and 2·7, and that of eosinophiles had fallen to 7 and 9 at the two examinations recorded.

A. A.

THIBIERGE (George). **Sur la transmission à l'homme de la gale sarcoptique du chat.**—*Rev. Path. compar. et Hyg. Gén.* 1923. May 5. Vol. 23. No. 228. pp. 1–10. [9 refs.]

The morphology of *Sarcoptes* (*Notoedres*) *cati* is briefly described and its size compared with and shown to be inferior to that of *Sarcoptes scabei*. Clinically the lesion produced by the parasite of feline scabies in man consists primarily of a small rose-coloured papule, slightly raised above the surface and pointed in the centre, resembling a small papule of strophulus. A vesicle soon develops in the centre, which vesicle breaks to form a brownish crust, the lesion becomes paler and flatter to leave only a brownish or greyish crust to persist

for a few days. This lesion is differentiated from other prurigo papules by being discrete, not accompanied by any secondary change (in uncomplicated cases) and by its distribution. Linear burrows and the vesicle accompanying such burrows of human scabies are entirely absent; pustulation does not occur unless the case is complicated by pediculosis. Occasionally, however, some lesions may be confluent with the appearance of urticarial formation. Characteristic is the arrangement of the papules in groups and their asymmetrical distribution most commonly on the trunk and limbs, particularly on the proximal areas of these, on the anterior aspect of the axillae, on the scapular region and occasionally about the waist. Removal of the infected animal readily leads to the disappearance of the lesions of the "host."

The differential diagnosis from other forms of prurigo and parasitic infection is recounted. Experimental transmission of *Notoedres cati* showed the life of this parasite on human skin to be brief, probably not longer than 48 hours. The usual mode of contagion is directly from the animal itself or indirectly from linen, especially bed-linen, with which the infected animal has been in close contact. Treatment consists in simple bathing and the application of emollient ointments: All anti-parasitic local applications are to be avoided.

[This paper is an admirable and comprehensive account of the disease.]

W. J. O.

PANJA (Ganapati). **Notes on the Aetiology of Some Skin Diseases met with in the Tropics.**—*Indian Med. Gaz.* 1924. Apr. Vol. 59. No. 4. pp. 184–186.

The title of this short article sufficiently explains its contents. The writer's observations over a wide field are so condensed as to make the communcation of no real scientific and of little clinical value.

W. J. O.

FRANK (Robert T.). **Granuloma Inguinale: Report of a Case.**—*Southwestern Med.* 1923. Nov. Vol. 7. No. 11. pp. 401–403. With 1 fig.

JAMIN (H.). **Suite de la neuvième observation Tunisienne de Xéroderma pigmentosum.**—*Arch. Inst. Pasteur de Tunis.* 1924. Apr. Vol. 13. No. 1. pp. 133–134.

RODRÍGUEZ ARJONA (V.). [**Mal del Pinto in Yucatan.**]—*A.M.M., Mexico,* D. F. 1923. Vol. 1. p. 555. [Summarized in *Jl. Amer. Med. Assoc.* 1924. Mar. 29. Vol. 82. No. 13. p. 1085.]

BERIBERI.

FAR EASTERN ASSOCIATION OF TROPICAL MEDICINE. **Statements laid before the Committee on Beri-Beri Control and the Resolution recommended by the Committee as amended by the Council and passed at the General Meeting of the Fifth Congress of the Far Eastern Association of Tropical Medicine. 1923.**—12 pp. 1923. Singapore: Govt. Printing Office.

The members of the Fifth Congress came to the conclusion that any international convention for the control of beriberi was at present impracticable. They considered that beriberi was a disorder of nutrition, and that in the Far East the principal factor of its causation was the use of overmilled rice. They recommended further research on (1) the standardization of rice; (2) the effects of transport and storage; (3) economic considerations.

It was agreed that a beriberi international committee should be set up, to report at the next Congress, but in the meantime each Government should encourage research work to devise and apply practical methods for improving the diet of the general population, particularly with regard to the too exclusive use of overmilled rice.

The greatest use should be made of all educational opportunities.

P. W. Bassett-Smith.

MEGAW (J. W. D.). **The Beriberi Problem.**—*Fifth Congress Far Eastern Assoc. Trop. Med. Singapore, September, 1923.* 18 pp. [7 refs.]

The author was asked to put forward at the Congress his views on the etiology of beriberi against those of FRASER & STANTON, which are largely accepted in the Far East. They were fully stated in this *Bulletin*, Vol. 20, pp 812–4. The variety of conditions called beriberi and the want of sufficient clinical knowledge are emphasized, and a provisional definition is suggested. The author considers the cardiac signs as a *sine qua non* of beriberi, and does not appear to give sufficient value to beriberi in areas where rice is not the staple diet, but of which there is much evidence now. The whole paper is naturally full of debatable points, but the conclusions are definite that the disease is due not to a deficiency of vitamin B, but to an intoxication brought about by the consumption of damaged rice, the noxious product being produced before the rice is eaten; of this product or toxin no definite evidence has yet been found. This "rice intoxication disease" is a separate entity from avitaminosis B. In the main it is a reversion to BRADDON's theory, and the practical outcome is the importance of careful storage and preparation of the rice, with certain dietetic rules which must be kept.

[Papers like this are most stimulating, for there is no doubt that the last word on the etiology of beriberi has not been said, and more information is required to connect up cause and effect. It is very easy to build up a case when working by induction, but the results have to be carefully checked before they are accepted.]

P. W. B-S.

OGATA (Tomosaburo), KAWAKITA (Shintaro), KAGOSHIMA (Shigeru), SUZUKI (Susumu) & OKA (Harumiti). **On the Question of Identity of Beri-Beri with Polished Rice Disease.**—*Japan Med. World.* Tokyo. 1924. Feb. 15. Vol. 4. No. 2. pp. 23–27. [10 refs.]

——, —— OKA (Harumichi), SUZUKI (Susumu) & KAGOSHIMA (Shigeru). **Kritische Betrachtung ueber Identität oder Nicht-identität der Vitamin-B-mangelkrankheit mit der menschlichen Kakke.**—*Deut. Med. Woch.* 1924. Apr. 25. Vol. 50. No. 17. pp. 527–529. [10 refs.]

The authors summarize their experimental work of many years on beriberi and polished rice disease. The latter they prefer to call avitaminosis, and consider to be distinct from beriberi.

They believe that the frequent errors that have been made of attributing beriberi to a deficiency of vitamin B alone are due to a superficial and incomplete knowledge of the clinical and pathological facts. The differences are categorically set out under twelve headings, and a conclusive factor according to them is that in the avitaminosis of birds there is a decrease of the vitamin B in the tissues, which is not the case in the bodies of beriberi patients that have been investigated as compared with non-beriberi cases. In infants fed upon a special cereal powder NAGAYO has described a condition which exactly resembles polished rice disease, or avitaminosis, and differs from true beriberi. The greater part of the material in the paper has been previously published.

P. W. B-S.

OHOMORI (Kenta). **Studies on the Cause and Treatment of Beri-Beri in Japan.**—*Japan Med. World.* Tokyo. 1923. Nov. 15. Vol. 3. No. 11. pp. 231–238.

——, OHHASHI (Yoshihiko), NAKANISHI (Toshita), HARA (Masatoshi) & OHTA (Toshiwo). [**Studies on the Etiology of Beriberi.**]—*Keio Igaku* (*Kei o Med. Jl.*). 1923. Mar. Vol. 3. No. 3. [Summarized in *Japan Med. World.* Tokyo. 1923. Nov. 15. Vol. 3. No. 11. pp. 249–250.]

Human experiments showed that beriberi patients fed with food rich in vitamin B recovered; when it was deficient in the vitamin they got worse; if the food had a very high carbohydrate content the onset was hastened, but if there was much protein and fat it was retarded. There was also some relation between the oedema and salt retention.

In feeding experiments the incubation period varied from 7 to 10 days, but this depended upon the amount of food taken.

The conclusion is that as beriberi is a metabolic disease due to avitaminosis, it can be cured or prevented by a supply of vitamin B. Recovery is slower in human than in animal beriberi, as the disease of the nerves is greater. One of the predisposing causes is considered to be a "status lymphaticus" with large thymus glands when the heart is often small and the blood-pressure low. In severe cardiac cases of beriberi the thymus gland and Peyer's patches are often enlarged. The inducing causes are warm temperatures and high degree of humidity in low lands where there is much overcrowding; debilitating diseases and pregnancy increase the incidence.

The authors differ from most Japanese investigators in considering that the avitaminosis of birds and beriberi are similar, and that both may be cured by supplying vitamin B.

P. W. B-S.

SCALA (A.). **Sull' etiologia del Beriberi.**—*Ann. d'Igiene.* 1924. Mar. Vol. 34. No. 3. pp. 184–189. [4 refs.]

Experiment has shown that the nerves in animals suffering from polyneuritis exhibit a delay in transmission of impulses. The rapidity of cure resulting from the use of bran extracts contraindicates histological degeneration and points to some toxic action. This toxin is believed to be an acid, or an excess of H-ions in the nervous tissues.

In order to test this the author determined the velocity of propagation of impulse before and after injection of extract and found that in the latter case, as also in a normal animal, the rate was 60 metres per minute, whereas in cases of polyneuritis it was "much slower." He then carried out an analogous series of experiments on nerves artificially paralysed by immersion in Ringer's solution to which hydrochloric acid had been added. Some were then treated with extract and immersed in neutral Ringer's fluid, others were left in the acid solution and extract added. Recovery was more rapid in the latter. The extract was further found, when added to a solution of HCl, to diminish markedly the acidity; it has also the property of reducing surface tension and is thus rapidly absorbed. To this twofold action is ascribed the rapid amelioration of polyneuritic animals.

The author next examined the H–ion concentration of paralysed nerves and found that it was the same in a nerve excised from a fowl suffering from polyneuritis as in a healthy nerve paralysed by immersion in acid, or in one taken from a fowl paralysed after feeding with polished rice, but 5–10 times that of a normal healthy nerve.

There was no corresponding change in the H–ion content of the blood, and it is concluded, therefore, that nerves have the property of electively fixing these ions and that "anti-beriberic vitamin is a colloid substance and probably of proteid nature and acts by detoxicating the organism or the nervous system by neutralizing the acid, a property possessed by all colloids."

[The author apparently takes it for granted that beriberi and polyneuritis gallinarum are the same.]

H. Harold Scott.

MCCARRISON (Robert). **Rice in Relation to Beri-Beri in India.**—*Brit. Med. Jl.* 1924. Mar. 8. pp. 414–420. With 5 figs.

The observations and experiments, with the deductions made from them, on the beriberi rice problem are from the experience of the author in India and do not necessarily apply to other parts of the world. He first enumerates the various theories that have been put forward and shows that all are defective. All areas where rice is the basic diet are not affected with beriberi, viz., the west coast of India, while in the same latitude on the east the heaviest infected endemic district is found. In non-endemic areas the consumption of parboiled rice gives only about one tenth the number of cases to that of raw and polished rice, yet in the endemic centres this reduction does not occur. In the endemic area in Madras, it is those living on a mixed diet that suffer most; the Hindus who do not use parboiled rice at

all, are least affected. It is stated that in Madras beriberi only *originates* in jails in the endemic zone. There is also the important fact that out of 565 cases in India from 1900–1914, 492 were in Madrasees. From these observations, many of them made by MALCOLMSON in 1835, the author is convinced that there are factors in the causation of beriberi in endemic areas—apart from the exclusive use of a rice dietary—which are absent or feebly potent in non-endemic areas. No evidence was found of an intrinsic poison in the rice itself.

From a very large number of experiments with all kinds of rice on pigeons three important points were demonstrated ; (1) the beneficial effects of parboiling ; (2) the effects of various degrees of milling and polishing ; (3) the enormous loss of nutrition and vitamin values entailed by high milling and polishing. A rice may be potent to cause polyneuritis columbarum and yet not be associated with human beriberi in places where it is known to be the staple diet for man. In the series at Madras it was shown that it is rather those kinds of rice that are relatively less deficient in vitamin B than those that are relatively more deficient in this factor that are known to be associated with human beriberi. Curiously it was only quite recently that McCarrison ever saw a case of beriberi in his pigeons, viz., with enlarged and degenerated heart, enlarged liver and adrenals, polyneuritis and hydropericardium. These signs were found in birds fed upon Masulipatam rice, which has a fair amount of vitamin B, in the most noted beriberi centre in India. In an experiment with this rice on three birds, one maintained its weight and health, one died of beriberi on the fifteenth day, and one died of septicaemia on the 38th day ; in another experiment with the same rice, out of 18 birds, two developed beriberi and six polyneuritis. From this variability (which renders any deductions difficult) he develops his " carrier " theory, that there is some factor in the birds themselves, which, associated with a deficiency of vitamin B, gives rise to the syndrome of beriberi. This view is supported by the fact that the disease was more common in Bangalore birds than in birds obtained from a beriberi-free neighbourhood.

A very interesting example is given of birds fed upon clean polished rice, developing polyneuritis in 25 days, and others fed on millet exclusively, none of which got beriberi, but if the two foods were combined, the birds lived longer and developed beriberi symptoms. There was here no complete want of vitamin B, but an insufficiency in the millet to metabolize the rice. Thus beriberi in pigeons is not due to a complete lack of vitamin B in the diet (there is not time enough for the heart lesions to be produced), but to a condition of *insufficiency*.

The author shows that there was a similarity between the cause and incidence in his pigeons and of an outbreak in a battalion of 800 Gurkas ; here the case incidence was 3·7 against 3·8 in the birds and the small percentage infected or large percentage who escaped is explained by the surmise that the infected may have been " carriers " of some organism whose products acted upon the heart muscle, or some change occurred in the gastro-intestinal flora, or that by faulty metabolism an intrinsic poison was evolved. The evidence of a poison in the infected birds is, he thinks, clear, and this late work supports his conclusion of 1919, that vitamin deficiency is rarely the sole agent in the causation of beriberi.

In pigeons beriberi-like diseases may be divided into :—

(1) Infective polyneuritis due to infection, but favoured in its genesis by vitamin deficiency.

(2) Polyneuritis due to vitamin deficiency only.

(3) Polyneuritis due to vitamin deficiency but precipitated by various infections.

(4) A disease presenting the characters of true beriberi, due to an unknown agent acting in association with insufficiency, but not complete want of vitamin.

The same variability of symptoms in man may also be due to similar etiological factors. The disease itself requires more clinical study.

[The evidence brought forward by MURATA (see below), that the heart symptoms are sequelae rather than primary and necessary signs must be considered, also the fact that polyneuritis if prolonged does go on to beriberi in animals. There does not seem to be any definite line between the one and the other.]

P. W. B-S.

KING (W. G.). **Rice in Relation to Beri-Beri.** [Correspondence.]—*Brit. Med. Jl.* 1924. Apr. 12, pp. 688–689.

From his long experience in the Madras Presidency Col. KING draws attention to much of interest bearing on MCCARRISON'S "local poison" theory of beriberi. To the "conditions" noted he suggests the addition of, "and under any circumstances of personal or communal hygiene tending materially to affect health," the influence of general hygiene as an accessory factor being of the greatest importance. Historically there is evidence that beriberi was present long before rice was in general use, and even now in the Kistna district rice is merely a luxurious addition to dry grain. In the periods of famine, 1876–78 and 1896–97, symptoms of starvation rather than of beriberi were present. Generally MCCARRISON'S views are supported, but the warning that "any of the numerous theories of beriberi causation might be supported by data gathered in equally diverse areas" is very pertinent. The importance of *early* blood examinations to detect a possible infecting virus is emphasized.

P. W. B-S.

BOSE (S. R.). **The Spore-forming Bacterium on Rice-Grains used by Families suffering from Beri-Beri and Epidemic Dropsy.**—*Lancet.* 1924. May 24. pp. 1054–1055.

The author gives more fully his investigations regarding the spore-bearing proteolytic organism (see this *Bulletin*, Vol. 21, p. 97), which he found in both healthy and damaged rice. He cannot credit that an organism so abundant and generally diffused can be the cause of epidemic dropsy, which is a comparatively rare disease.

P. W. B-S

BERNARD (P. Noël) & GUILLERM (J.). **Action de** *Bacillus asthenogenes* **sur les aliments (recherches sur le béribéri).**—*Bull. Soc. Path. Exot.* 1923. Dec. 12. Vol. 16. No. 10. pp. 743–760. [5 refs.]

The *B. asthenogenes* isolated from cases of fever of undetermined origin in Cochin China (1920), and causing pathogenic symptoms in piglets, is here studied with relation to its action on food substances and to beriberi. Much detailed work is given, It ferments hydrocarbons, proteins, etc., with formation of various volatile and fixed acids, the variety of acids, propionic, butyric, acetic, etc., depending on the quantity and quality of the foods. Animals fed on rice and

infected with *B. asthenogenes* developed irritation and ulceration of the gastric and intestinal mucous membranes dependent upon the acids produced by fermentation, with an asthenic condition of the stomach and early constipation. There does not appear to be any evidence that the destruction of vitamin B is caused by this microbic fermentation. It is thought that the study of the fermentations in the stomach of the piglets affected experimentally and of human beriberi are important subjects for further research.

P. W. B-S.

BERNARD (P. Noël) & GUILLERM (J.). **Action de *Bacillus asthenogenes* sur les corps phosphorés organiques. (Recherches sur le béribéri.)**—*Bull. Soc. Path. Exot.* 1924. Feb. 13. Vol. 17. No. 2. pp. 153–163. [5 refs.]

In the belief that a low phosphorus content in the food plays a part in the production of beriberi, and assuming the correctness of the statement made by BRÉAUDAT (1913) that beriberics excrete more purins and phosphates than they ingest, experiments were made to determine if *B. asthenogenes* reduces the phosphates in food by converting organic compounds into inorganic less easily assimilated forms. An analysis of the organism showed it to be rich in phosphates, and when grown on various media it was able to mineralize the phosphorus compounds in animal substances, but with vegetable substances (as bran, whole rice, etc.) these compounds remain in their organic condition. The quantity of soluble organic phosphorus will vary according to the amount of decortication. If therefore a deficiency of organic phosphate (nucleoproteids, etc.) plays an essential part in the production of beriberi, then it is possible that an organism like *B. asthenogenes*, which impedes the assimilation of the phosphorus compounds ingested, might play an important part in causation.

P. W. B-S.

FLEMING (Wm. D.). **Metabolic Mechanism in Beriberi.**—*Philippine Jl. Sci.* 1923. Nov. Vol. 23. No. 5. pp. 407–411. [13 refs.]

This is a study of the metabolic changes that take place in human beriberi. The experiments were carried out at the Philippine General Hospital, Manila. The work consisted in a determination of the basal metabolic rate, urinary nitrogen, respiratory quotient, and the fractions of heat derived from proteins, fats and carbohydrates respectively. The following results were obtained :—(1) In a series of beriberi cases the basal metabolic rate was the same as that of the normals, the respiratory quotients were normal, the combustion of fat, protein, and carbohydrates were practically so. There was no evidence of a high carbohydrate intake acting as a disturbing factor. (2) The blood sugar value was against the high carbohydrate intake causing a diabetic tendency. (3) There was no evidence of damage to the excretory power of the kidney in either wet or dry beriberi.

P. W. B-S.

KOBAYASHI (Yoshiwo). [**On the Consistency and NaCl Contents of the Blood and Edematous Fluid in Beriberi and Other Edematous Diseases. I. Communication on the Study of Edema in Beriberi.**]—*Nisshin Igaku* (*Progress in Medicine*). 1923. Sept. Vol. 12. No. 11. [Summarized in *Japan Med. World.* Tokyo. 1924. Jan. 15 Vol. 4. No. 1. p. 13.]

The albuminous content of both blood and fluids from the tissues in beriberi was reduced, differing thus markedly from conditions found in

nephritis. The general features indicated a disturbance of the tissues rather than one of the blood circulatory system. Beriberi oedema appears therefore not to be of renal origin.

P. W. B-S.

McCarrison (Robert). **The Relation of Manure to the Nutritive and Vitamin Value of Certain Grain.**—*Brit. Med. Jl.* 1924. Mar. 29. pp. 567–569. [3 refs.]

The restricted endemic distribution in India of beriberi [see above] led the author to believe that possibly the nutritive and vitamin value of food grains may vary with the condition of the ground and the manure used in its cultivation. Fortunately in Coimbatore, at the central farm of the Madras Agricultural College, 10 permanent plots laid down in 1909 and dressed with varying kinds of artificial and natural manures were available ; and on these crops of millet were grown and used for the tests carried out on groups of pigeons at the Pasteur Institute, Coonoor. These experiments were divided into three series:—(1) On a vitamin-free diet plus regulated quantities of the millet from the 10 different plots, the weight of the birds was carefully noted ; the greatest daily loss occurred in the birds fed upon the millet grown on non-manured ground, and least with that fertilized continuously with cattle manure ; that is, the nutritive value of the grain varied with the manure used : (2) When the birds were fed exclusively on the various forms of millet, those receiving the grain from the cattle-manured plots gained most in weight. (3) A further experiment showed that this grain also delayed the onset of polyneuritis in the pigeons to which it was given. Though these experiments are in no way final, they definitely point to the conclusion that, as is found in practical experience, "farmyard manure does contain something which artificial manure does not" and probably that part of this "something" is an increase of both nutritive and vitamin B values.

[The work that has been done is extremely interesting and suggestive ; in the near future, when funds are available, it will no doubt be followed up, when more conclusive deductions will be possible.]

P. W. B-S.

Bassett-Smith (Percy). **Naval Medical History of the War. Section of Tropical and Sub-Tropical Medicine. Part VI.—(i) Beri-Beri.**—*Jl. Roy. Nav. Med. Serv.* 1924. Jan. Vol. 10. No. 1. pp. 34–38. With 1 text fig.

Most of the cases occurred during the first two years of the war, and were either among the native crews of armed cruisers or among ratings who had been serving in the Persian Gulf. In 1914 eighty-six cases occurred in the armed cruisers on the China station ; all were native ratings with the exception of one engine-room officer. These men could not be induced to eat unpolished rice, but preferred to go hungry ; they had, however, in addition fresh meat every day and fresh vegetables. An outbreak on H.M.S. Fox in the East Indies station was ascribed to the trying climatic conditions, mouldiness of the flour, and a monotonous diet. There was one death. All cases treated at Greenwich received besides ordinary anti-beriberi diet, an alcoholic extract of wheat bran and wheat embryo. Cases of ship beriberi occurred amongst Europeans, who, though suffering from other symptoms, retained the knee jerks throughout their illness.

P. H. Manson-Bahr.

MEGAW (J. W. D.) & BHATTACHARJEE (S. P.). **An Outbreak of the Epidemic Dropsy Form of Beriberi in Calcutta.**—*Indian Med. Gaz.* 1924. Apr. Vol. 59. No. 4. pp. 169–173. With 1 map.

The epidemic consisted of 70 cases divided into six groups.—Campbell Medical School, lady students; Hindu working classes; three groups of Mahomedan working classes; Anglo-Indian railway employees. These cases occurred in small groups in one quarter of the city, almost simultaneously; the clinical symptoms were not severe and there were only two deaths, both in untreated cases. A dietary table for the affected groups and controls is given which appeared to supply sufficient calories and vitamins, but the one common article of food was rice of the "parboiled" variety. There was evidence that the rice had been mostly stored for about a year. The map illustrates the relationship of the store and the incidence of the cases. If the disease is caused by poisoned rice it is likely that it came from the large rice market of Beliaghata. Controversial argument is entered into with regard to vitamin deficiency or a rice toxic origin of the disease, and the view is insisted on that avian polyneuritis and human beriberi are not definitely comparable, and though deficiency of vitamin B may be a secondary cause (in this as in other diseases) it is not the primary etiological factor.

P. W. B-S.

FERNANDO (Antonio S.). **Laryngeal Symptoms in Beriberi.**—*Philippine Jl. Sci.* 1924. Jan. Vol. 24. No. 1. pp. 41–43. [1 ref.]

In cases of infantile beriberi, aphonia is one of the most common symptoms. The author describes two cases of adult beriberi in which there was loss of voice with paralysis of the left vocal cord. In both there was marked enlargement of the heart which might have caused the pressure symptoms, but as laryngeal signs are uncommon and hypertrophy of the heart frequent, this explanation is less reasonable than that of VEDDER who considers the aphonia "probably due to degeneration of the pneumogastric nerves thus causing paralysis of the laryngeal muscles."

P. W. B-S.

SACCHETTO (Italo). **Le alterazioni di sviluppo dello scheletro nel beri-beri sperimentale. Nota 1.** [The Changes in the Development in the Skeleton in Experimental Beriberi.]—*Pathologica.* 1923. Sept. 1. Vol. 15. No. 355. pp. 515–521. With 2 figs. & 1 graph. [15 refs.]

The author used for the experiments young fowls fed on polished rice or polished barley, with efficient controls. The weight curves were taken and the birds killed after about three months, when special attention was paid to the condition of the long bones and internal organs. The failure of growth was most marked in those fed upon polished barley. The chief characteristics recognised were (1) Diminished chondral ossification with fewer osteoblasts and little lamina formation. (2) Diminished periosteal activity and ossification. (3) Abnormal condition of the ossifying cartilages; absence of haemorrhages as seen in scurvy, or rarefaction as in rickets.

There was a definite parallelism between the changes in the bones and nerve tissues and the degree of deficiency in the diet.

The author was of the opinion that the condition was not due alone to the want of vitamin, but depended upon various factors provoked by the insufficient alimentation of proteins and mineral salts. There was an associated condition of general malnutrition, lowering of temperature, and often acidosis, with grave changes in the animal cells (partial starvation).

P. W. B-S.

MURATA (M.). **Ueber die beri-beri-ähnliche Krankheit beim Kaninchen.** [On the Beriberi-like Disease in Rabbits.]—*Virchows Arch. f. Path. Anat. u. Physiol.* 1923. Vol. 245. pp. 448–476. With 7 figs. [17 refs.]

The work was done at the Pathological Institute at Osaka. The animals were divided into three groups—(1) Free feeding on polished rice and water only. (2) Forced feeding with polished and unpolished rice. (3) Free feeding with rice, rice straw and water.

Very detailed observations on the clinical observations, weights, and post mortem findings are given.

It was found that the condition of the heart in these experimental rabbits differed very appreciably from that seen in human beriberi in that there was no hypertophy, but on the contrary marked atrophy. KURE has suggested that the hypertrophy of the heart in human beriberi is due to deficient respiration, and OHMURA has been able to show that the increase in the right heart of guineapigs could be produced by controlling the breathing by means of a band round the thorax; the experiment lasted 100 days; both hypertrophy and dilatation were produced. In human beriberi, owing to the paralysis of the intercostals and diaphragm, and in the guineapigs from constriction by a band, respiration is hindered and the right heart becomes dilated, whereas in rabbits who are breathing freely when not disturbed, no such dilatation takes place. Thus the increase in the size of the heart is not primary, but secondary to degeneration of the nerves and muscles. In the rabbits this degeneration had not advanced far enough to hinder the breathing, and the absence of any hypertrophy of the heart in these animals should not be regarded as an important difference between the beriberi of the two types. In his conclusion he states that the disease in rabbits may be identified etiologically and also in its clinical and pathological evidences with human beriberi, although at the same time several differences were noted, and he feels justified in calling this sickness producted by rice-feeding rabbit beriberi.

P. W. B-S.

KAMIZA (Rikei). [**Beriberi-like Disease of the Mammalians arising from the Insufficient Supply of Potassium Salts and Curative Efficacy of Potassium Derivatives against Beriberi (concluded).**]—*Chugwai Iji Shimpo (Internat. Jl. Med.)* 1923. May. No. 1035. [Summarized in *Japan Med. World.* Tokyo. 1923. Dec. 15. Vol. 3. No. 12. p. 275.]

In instances of disease in which the clinical and pathological evidences were more like those of human beriberi than the so-called beriberi-like disease, there was an insufficient supply of potassium salts in the diet; when these were provided the clinical results were better than with other methods of treatment.

P. W. B-S.

KATSUMA (Seizo). [**On the Differences between the Attitudes taken by the Blood Platelets in Human Beriberi and Rat's Vitamin B Deficiency.**]—*Iji Shimbun* (*Med. News*). 1923. Nov. No. 1128. [Summarized in *Japan Med. World.* Tokyo. 1924. Feb. 15. Vol. 4. No. 2. p. 36.]

The differences in the blood platelet counts and the pathological appearances of the pituitary glands in human beriberi cases and in rats suffering from vitamin B deficiency disease led the author to conclude that the conditions are not identical.

P. W. B-S.

KONDO (Y.). **Contribution to our Knowledge of the Polished Rice Disease in Fowls.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. of Formosa*).—1923. Nov. No. 231. English summary p. 2. [In Japanese.]

Polyneuritis due to feeding on polished rice only was produced in 17 fowls. After recovery these were several times subjected to the same dietary and it was found that (1) it took longer for the symptoms to become manifest, as if some sort of immunity had been established, or that the birds had accommodated themselves to the deficiency of the vitamin. (2) The islands of Langerhans in the pancreas during the first attack were increased in size, but not in the subsequent periods. (3) The onset of the symptoms showed an inverse ratio to the air temperature. (4) Sex had no influence on the onset or intensity of the symptoms.

P. W. B-S.

SHIMAZONO (Junjiro). [**On the Therapeutic Treatment of Serious Cases of Beriberi with Suzuki's Raw Oryzanin.**]—*Chugwai Iji-Shimpo.* 1923. Mar. No. 1032. [Summarized in *Japan Med. World.* Tokyo. 1923. Oct. 15. Vol. 3. Nos. 9–10. p. 223.]

The author treated 16 cases of beriberi with raw oryzanin (a rice bran extract). One case died, and eleven improved, but he is doubtful whether these good results were entirely due to the efficacy of the preparation.

P. W. B-S.

LIPSCHITZ (W.). [**The Action of Tyramin on Pigeon Beriberi.**]—*Hoppe-Seyler's Ztschr. Physiol. Chem.* 1923. Vol. 124. No. 3–6. pp. 194–201. With 3 figs. [Summarized in *Experim. Station Rec.* 1923. Oct. Vol. 49. No. 5. p. 462.]

Curative tests were carried out on 9 birds which had been fed for several weeks on polished rice and had well marked symptoms; 5 to 10 mgm. of tyramin were injected intramuscularly. In 5 cases (4 birds) there was distinct improvement, in 5 others no good result. As compared with vitamin preparations it had very little prophylactic power against vitamin sickness and its curative action is far less than that of the vitamin B complex.

P. W. B-S.

IKEDA (Tohkichiro). [**Studies on the Efficacious Substance in the Rice Bran Extracts against Bird's Polished Rice Disease. (1 Communication.)**]—*Toyo Igaku Zasshi* (*Jl. Oriental Med.*) 1923. Oct. Vol. 1. No. 3. [Summarized in *Japan Med. World.* Tokyo. 1924. Feb. 15. Vol. 4. No. 2. p. 41.]

The water-soluble substance effective against polished rice disease was identified as one able to facilitate the proliferation of *Saccharomyces ellipsoides* 1. It reacted to reagents like alkaloids, but no colour reactions were observed.

P. W. B-S.

SCURVY.

SCOTT (G. B.). **Naval Medical History of the War. Section of Tropical and Sub-Tropical Medicine. Part VI.—(ii) Scurvy: on Board the Russian Transport** *Dvinsk.*—*Jl. Roy. Nav. Med. Serv.* 1924. Jan. Vol. 10. No. 1. pp. 38–40.

An outbreak of scurvy amongst 618 Austrian and German prisoners and 450 Russian workmen in the Murmansk region is here recorded. Their food had consisted almost entirely of rye bread with a little reindeer meat at long intervals. Of these 1,068 men nearly every one showed signs of scurvy and some were very advanced cases. All the familiar symptoms and signs of the disease were present. Naval Issue Lime Juice was served out from large tubs each morning, which with onions, carrots, frozen meat (and fresh air), soon restored them to health. Before reaching Archangel (a voyage which occupied 9 days) there were three deaths. A considerable number were permanently crippled from haemorrhages into the knee joints.

P. H. Manson-Bahr.

GOTTSCHALK (Charlotte). **Ueber Blutuntersuchungen beim kindlichen Skorbut.** [Blood Research in Infantile Scurvy.]—*Arch. f. Kinderheilk.* 1923. Dec. 18. Vol. 73. No. 4. pp. 244–251. With 2 text figs. [24 refs.]

The case of a rickety boy aged six months is fully described, with blood counts. The blood picture was of the pernicious anaemia type but with low haemoglobin index and a lymphocytosis. A typical condition of infantile scurvy was present with pseudo-paresis, subperiosteal haemorrhages, haematuria, X-ray bone changes, low red count (2,600,000), presence of megaloblasts, etc., and slight increase in number of the white cells. The blood condition gradually improved and in five months was normal. The local signs were then better, though the epiphyses were still indistinct. These observations are in favour of the views of von AVON that the anaemia of this disease is of an alimentary origin and the blood changes are due to a toxin which acts upon the bone marrow.

P. W. Bassett-Smith.

NEVILLE (D. W.). **A Case of Scurvy occurring in Melbourne.**—*Med. Jl. Australia.* 1924. Jan. 19. 11th Year. Vol. 1. No. 3. pp. 63–64. With 1 fig.

The case was that of an old age pensioner of 68 who had lived for many years in the city. He was very poor and had lived practically upon bread, cheese, butter and jam for the past three years. The general symptoms of scurvy were present, spongy bleeding gums, subcutaneous haemorrhages, joint pains, anaemia. The red cells only numbered 2,200,000 per cmm. and haemoglobin was 30 per cent. Antiscorbutic treatment rapidly brought about a cure.

P. W. B-S.

HESS (Alfred F.) & WEINSTOCK (Mildred). **The Catalytic Action of Minute Amounts of Copper in the Destruction of Antiscorbutic Vitamin in Milk.**—*Jl. Amer. Med. Assoc.* 1924. Mar. 22. Vol. 82. No. 12. pp. 952–956. With 4 charts. [10 refs.]

It has been previously demonstrated that the antiscorbutic vitamin is readily destroyed by oxidation especially in the presence of heat and under the action of copper. The catalytic action of the metal is brought about by very minute quantities as shown by the experiments of the authors. In cows' milk normally about 5 mgm. per litre of copper is present and in human milk about the same. Quantities of lactate of copper equal to 14, 9, 6 and 2·5 parts per million added to diluted dried milk were fed to guineapigs and produced scurvy, generally in less than a month. In the preparation of preserved foods this is of great practical importance, for if the apparatus adds to the milk small quantities of copper the results are detrimental. As the manufacture of condensed milk is carried on in vacuo there is very little destruction of the antiscorbutic vitamin in the course of the heating. When milk is pasteurized under ideal industrial conditions the danger is very small, but at other times the contaminating copper may rise to dangerous proportions, that is 2·5 mgm., or possibly less, per litre. This catalytic reaction is not limited to the reduction of the antiscorbutic factor, but has a much wider influence—acting upon the fat soluble vitamin in cream, butter, etc., and probably other foodstuffs. It is desirable therefore, to examine manufactured preparations not only chemically but by biological methods for estimation of the copper contained in them.

P. W. B-S.

LESNÉ (E.) & VAGLIANO (M.). **Le pouvoir antiscorbutique du lait condensé sucré de vieille préparation.**—*C.R. Soc. Biol.* 1924. Feb. 22. Vol. 90. No. 6. pp. 393–394. With 1 chart. [3 refs.]

Guineapigs of about 300 gm. weight fed upon a basic antiscorbutic diet were divided into three groups. To the first, 25 gm. of sweetened condensed milk in 75 cc. of distilled water was given every day, to the second 100 cc. of milk sterilized at 100°C. for 15 minutes, to the third 100 cc. of raw milk. The animals on the sterilized milk died as usual in about 18 days; the others remained in perfect health and gained weight. He asks: "Was this retention of antiscorbutic power by the heated sweetened milk due to its anaerobic state or was it due to the reducing action of the sugar?" The preserved milk remains effective for at least 15 months.

P. W. B-S.

i. ZILVA (Sylvester Solomon). **The Antiscorbutic Fraction of Lemon Juice. I.**—*Biochem. Jl.* 1924. Vol. 18. No. 1. pp. 182–185. [1 ref.]

ii. ——. **A Note on the Conservation of the Potency of Concentrated Antiscorbutic Preparations. II.**—*Ibid.* pp. 186–187. [2 refs.]

i. It was desirable to determine whether the sugar present in decitrated lemon juice had any value in the antiscorbutic action. Its removal, which must be carried out without injury to the antiscorbutic factor, was effected by fermenting the sugar with yeast in an atmosphere

of CO_2, followed by filtration through a Berkefeld filter. A careful series of controlled experiments with guineapigs showed that the antiscorbutic substance was not thereby appreciably reduced. The greater part of the solid of decitrated lemon juice consists of invert sugar; the remainder seems to be mainly nitrogenous substances.

It was also found that the fermented solution made *alkaline* N/20 and kept under strict anaerobic conditions remained active for 56 days, but kept for even 24 hours aerobically in the laboratory it was unable to delay the onset of scurvy when given in 5 cc. doses daily to guineapigs.

ii. Decitrated lemon juice, prepared as described above, was concentrated ten times, stored in the dark for five months, and then tested on guineapigs. The antiscorbutic value was maintained. When used in a case of infantile scurvy under the treatment of Dr. G. F. STILL, at Great Ormond Street Hospital, a rapid recovery followed. The treatment was very intensive; the equivalent of 15 lemons was given to the child in the first 24 hours and of 48 lemons in all over a period of ten days.

P. W. B-S.

KAY (Herbert Davenport) & ZILVA (Sylvester Solomon). **The Alleged Specific Colour Reaction for the Antiscorbutic Factor.**—*Biochemical Jl.* 1923. Vol. 17. No. 6. pp. 872–874. [5 refs.]

In 1922 BEZSSONOFF devised a reagent which he claimed gave a specific colour reaction with the antiscorbutic factor. By employing this reaction on a large number of substances, which were simultaneously tested out on guineapigs, the authors conclude that there is such a reaction in some cases, but not in all. Lemon juice specially concentrated and active, failed to give the reaction, but a positive colour was obtained with yeast, yeast extracts and marmite. The test of BEZSSONOFF is not reliable enough to be of any use in the detection of vitamin C.

P. W. B-S.

CARIDROIT (F.). **Variation de l'excrétion azotée (azote total urinaire) au cours du scorbut expérimental.**—*C.R. Soc. Biol.* 1924. May 30. Vol. 90. No. 18. pp. 1379–1380.

In four guineapigs subjected to experimental scurvy the metabolic activity was tested by examination of the urine, which showed that these animals failed to utilize the proteins of their food but used up their own. Thus the toxic symptoms result either from the destruction of the normal anti-toxic principles or from liberated true toxins, with or without the co-operation of glandular internal secretions.

P. W. B-S.

UNDULANT FEVER.

BASSETT-SMITH (Percy). **Naval Medical History of the War. Section of Tropical and Sub-Tropical Medicine. Part IV. Mediterranean or Undulant Fever.**—*Jl. Roy. Nav. Med. Serv.* 1923. Oct. Vol. 9. No. 4. pp. 278–285. With 4 charts & 1 fig.

In 1904 there were 430 cases of undulant fever in the Navy, with 28,458 days' sickness and nine deaths; but owing to the compulsory sterilization of all fresh milk in the service in 1907 this was reduced to twelve cases.

At the commencement of the Great War the importance of maintaining all precautions against the ingestion of infected milk and foods was emphasized by a special order, and no very great increase of the disease was noted. In all there were 88 cases, of which 19 were in Maltese and 6 in French, reducing the British cases to 63 for five years, or an average of 12·8 a year, with one death. Four cases were recorded from the East Indies, all in Maltese, and one from Bermuda.

The resemblance between *Micrococcus melitensis* and *Bacillus abortus* is a very close one and the serum of a Mediterranean case of undulant fever agglutinated abortus up to 1 : 2,000. In fifty cases the fever was remittent, and hyperpyrexial in five; rheumatic-like pains and neuritis were recorded in thirteen; bronchitis in two; tachycardia in two; epistaxis in one; mental symptoms in two.

In fourteen cases goat's milk was the source of infection, in one, cow's milk. In one case the organism was obtained by blood culture, the disease lasting eight months. One death occurred from dementia; at the autopsy the spleen, liver and kidneys were all enlarged; the appendix was gangrenous. There was one case of "paramelitensis fever" from the Adriatic; the blood agglutinated *M. melitensis* 1 : 100 and *M. paramelitensis* 1 : 2,000.

P. H. Manson-Bahr.

JEAN & SEDALLIAN (P.). **Notes étiologiques relevées à propos d'une endémie de fièvre de Malte observée dans une région du Gard.**—*C.R. Soc. Biol.* 1924. May 30. Vol. 90. No. 18. pp. 1435–1436.

In the district of Lussan during the past four years the authors have observed 65 cases of undulant fever, occurring mostly in the spring, in 14 villages among a population of 3,000 inhabitants. (An epizootic with abortion was present in the goats and sheep.) In 19 of the cases, the consumption of milk or cheese was the cause; 46 of the others were probably due to a more or less close association with the infected animals or their excreta, but not due to ingestion of the organisms. The epidemics in the animals were generally very much localized, and it is stated that the owners themselves had restricted the sale of new animals and had continued breeding with the old herd, which had become spontaneously vaccinated.

P. W. Bassett-Smith.

MARTEL (H.), RENAULT (J.), CESARI (E.) & LÉVY (P. P.). **Sur la transmission de la fièvre méditerranéenne par les troupeaux ambulants de chèvres laitières.**—*Bull. Acad. Méd.* 1924. May 27. Year 88. 3rd Ser. Vol. 91. No. 22. pp. 671–676.

The authors show that the endemic centres of undulant fever in France are now widely scattered; in fact, they are co-existent with the areas where goats are in use. The goats are brought down from the country to the towns and milked in the streets, and thus the infection is spread by the consumption of the raw milk.

They give details of a small outbreak, personally observed, where the infection of human cases from goats was bacteriologically proved; the herd goats showed no external evidences of infection and no history of abortions was obtained, but the serum of 14 showed a fairly high agglutination titre, and from the milk of one a number of suspicious colonies were grown. The herd was isolated, the milk was interdicted and the infected goats destroyed; but the authors state that since the difficulties and uncertainties of diagnosis in animals are so great the only certain safeguard is to boil the milk.

P. W. B-S.

MAGNANI (G.) & MORANDI (S.). **La febbre di Malta in Romagna.**—*Policlinico.* Sez. Prat. 1924. Feb. 11. Vol. 31. No. 6. pp. 182–185. [7 refs.]

Two clinical types of undulant fever are met with in this district. One is severe, the other is a mild, ambulant form of insidious onset. In neither is the typical chart presented, with alternating pyrexial and apyrexial periods lasting for days. There are profuse sweats, but no rigors or rheumatic pains, no orchitis, arthritis, or any of the usual complications. The mild form yields to serum treatment—20–30 cc. every 8 to 12 hours for 3 or 4 doses. Those with more persistent fever react better to vaccines in doses sufficient to produce a marked reaction. The disease spreads from the flocks to the shepherds, who are practically the only sufferers; 2·5 per cent. of the sheep and goats were found to be infected.

H. Harold Scott.

BÉGUET (M.). **L'agglutination des *Brucella melitensis* et le sérodiagnostic de la fièvre ondulante. Causes d'erreur et précautions nécessaires.**—*Bull. Soc. Path. Exot.* 1924. Feb. 13. Vol. 17. No. 2. pp. 110–114. [8 refs.]

The author used for his researches 17 sera from rabbits inoculated with *M. melitensis* and 3 with *B. abortus* and 7 from cases of undulant fever. These were tested with 17 strains of *M. melitensis* and 3 of *B. abortus*. The essential factors are the agglutinative powers of the serum and the agglutinability of the organism. The specific characters of the serum were found to vary not only in the different stages of the disease, but in each individual serum; these also varied remarkably with the strain used for immunization. Heating the serum at 56° for 30 minutes generally lowered the agglutinating power both before and after dilution; occasionally the reverse was noted, which is comparable with the paradoxical reactions found in various dilutions. The same was the case with *B. abortus*.

Non-specific agglutination was found in dilutions from 1–20 to as high as 1–500 in 142 out of 150 sera of other diseases; after heating the serum it was nil to 1 in 50, rarely present to 1–300. Further experience is required to determine how much this non-specific agglutinability depends upon age and methods of culture.

It is therefore necessary to employ for serum diagnosis of undulant fever only such strains of *M. melitensis* as prolonged experience has shown to be non-agglutinable at 1 : 20 by the non-specific substances in human blood, and sensitive to the specific antimelitensis factors. If such strain be used with heated and unheated serum in dilutions between 1–20 and 1–500 the positive results may be considered reliable.

P. W. B-S.

DOMINGO (Pierre). **Etudes sur la fièvre de Malte. Action de la bile sur l'agglutinabilité du** *Micrococcus melitensis.*—*C.R. Soc. Biol.* 1924. Mar. 28. Vol. 90. No. 11. pp. 824–825.

In the belief that the variations in the amount of agglutinability of particular strains of *M. melitensis* depend upon some change in the envelope of the organism, methods were taken to overcome this. It was found that treatment of the emulsion with ox bile gave satisfactory results both in increasing the action of specific agglutinins and in decreasing that of the non-specific ones. A very strong emulsion of the organism is made from a culture grown for 3 days on peptone agar, or better, placenta agar having a reaction of PH 7·6. This emulsion is mixed in proportion of 1 part to 9 with sterilized, filtered ox bile, remains in contact 24 hours and is well shaken 3–4 times. It is then centrifuged for 30 minutes. The sediment is emulsified in sterile saline solution to the degree of opacity required for the usual strength to carry out tests after filtration through cotton wool, and if to be kept 0·4 per cent. formalin is added. Thus treated, *M. melitensis* which have lost their agglutogenic powers have regained them, up to 1 : 850, and if low before treatment these have been raised from 1 : 15 to 1 : 750. In one strain tested the action of non-specific serums was cut out altogether. It is stated that by this method the *B. abortus* of BANG may probably be differentiated from the *M. melitensis.*

P. W. B-S.

DE BLASI (Dante). **Fenomeno paradosso e zona intercalata d'inibizione parziale in un siero agglutinante antimelitense.** [The Paradoxical Phenomenon and the Zone of Partial Inhibition in an Antimelitensis Serum.]—*Ann. d' Igiene.* 1923. Nov. Vol. 33. No. 11. pp. 765–770. [10 refs.]

By the "paradoxical phenomenon" is implied the failure of a serum to agglutinate in low dilution although its power in high dilutions is retained. A specimen of blood was sent from Nardo for a Wassermann test and for agglutination with *M. melitensis.* The blood was partially laked on arrival. The Wassermann reaction proved positive; agglutination was well marked in a dilution of 1 : 3,200 but negative

in 1 : 100. A week later the following results were obtained from the same serum :—

Dilution of serum	*Agglutination.*	*Dilution of serum.*	*Agglutination.*
1 : 3,000	+ + +	1 : 5,250	+
1 : 4,250	+ + +	1 : 5,500—6,000	+ + +
1 : 4,500	+ + +	1 : 6,250	+ +
1 : 4,750	+ +	1 : 6,500	—
1 : 5,000	±		

The author briefly discusses this phenomenon, regarding it as possibly analogous with the flocculation of aqueous suspensions of lecithin by magnesium sulphate which also gives irregular results, and thinks that the laking may have played some part.

H. Harold Scott.

BURNET (Et.). **Essais de diagnostic de l'infection à *M. melitensis* chez la chèvre par inoculation de mélitine. Réactions irrégulières.**—*Arch Inst. Pasteur de Tunis.* 1924. Apr. Vol. 13. No. 1. pp. 1–6. [2 refs.]

Further experiments were made by the author to determine the value of the intra-dermal " melitine " reaction as a diagnostic method for goats. Out of 645 tested, 85 (13 per cent.) reacted, and only 37 (5·7 per cent.) gave positive serum reactions. If divided into 3 groups, 2·5 per cent. gave simultaneously both reactions, 9·5 reacted to the " melitine " but not to the serum tests, and 3 per cent. gave agglutination but no filtration reactions. The tests are thus not in agreement. It is quite possible that the intra-dermal method might be more delicate than the agglutination test, but the failure in 3 per cent. when the serum tests were positive renders the method unreliable as a practical prophylactic procedure for the examination of goats.

P. W. B-S.

FORNACA (L.) & BUA-FAZIO (F.). **L'intradermoreazione per la diagnosi di febbre melitense.**—*Riforma Med.* 1924. Apr. 28. Vol. 40. No. 17. pp. 393–394.

The authors describe an intradermal test for the diagnosis of cases of undulant fever. The material employed is a 6–8 day culture of *M. melitensis* on ordinary agar. A loopful of this (No. 1 loop by Caplewski's scale) is emulsified in 2 cc. of " physiological serum " [? saline] and heated for 10 minutes in a water-bath at 100° C. ; when cooled, to each 10 cc. of the emulsion is added one drop of phenol. It is estimated that there are 2 million organisms per cc. ; 0·5 c.c is injected for the test. In positive reactions a vesicle develops in 40–60 minutes ; in 8–16 hours there is a red area the size of a sixpenny-piece with surrounding oedema and infiltration. This reaction begins to fade in 24–48 hours and has quite disappeared in 5–7 days. The control site (with normal saline and a drop of phenol to each 10 cc.) may show slight reddening which passes away in 48 hours.

The test has been carried out on eight cases of undulant fever proved by agglutination and blood-culture, on 50 patients suffering from other diseases and on 16 healthy subjects. The last two classes gave negative results. Among the other diseases were typhoid and paratyphoid B fevers, acute articular rheumatism, pulmonary tuberculosis in various stages, malaria, pneumonia, erysipelas and syphilis.

H. Harold Scott.

NATTAN-LARRIER (L.). **[The Diagnosis of Mediterranean Fever.]**—*Clinique et Laboratoire.* 1923. Dec. 30. p. 249. [Summarized in *Brit. Med. Jl.* 1924. Apr. 12. (Epitome) p. 56.]

The frequency of cases of undulant fever in France necessitates a better knowledge of the diagnostic methods. The author emphasizes the importance of the following.—(1) Agglutination reaction. (2) Blood culture. (3) Intradermal method. This latter is described in more detail, and is said to be more simple to perform and more constant in its result than the others. It should be of real value to clinicians in cases of unexplained pyrexia, though the reaction does not become positive till the seventh to eleventh day.

P. W. B-S.

AMABILE (Luigi). **Ricerche sul valore della sieroreazione di Wright—o sieroagglutinazione per il micrococco di Bruce—nella tuberculosi.** [Agglutination of *Micrococcus melitensis* by the Serum of Tuberculous Patients.]—*Riforma Med.* 1924. Mar. 10. Vol. 40. No. 10. pp. 217–219. [5 refs.]

Records have been published from time to time stating that the serum of tuberculous subjects has an agglutinating action on *Micrococcus melitensis*, often in high dilution. The author carried out the test with 86 sera in dilutions varying from 1 in 60 to 1 in 1,000 on four strains of the organism. Only one yielded a positive result and from the blood of this patient the *M. melitensis* was subsequently isolated. The test, therefore, appears to be specific.

H. Harold Scott.

PISANI (S.). **La forma pseudo-tubercolare della febbre di Malta.**—*Riv. Crit. di Clin. Med.* 1924. Feb. 15. Vol. 25. No. 5. pp. 113–129. [10 refs.]

Under the name of " Mediterranean phthisis " a condition has been recognized for years in some respects resembling tuberculosis of the lungs, but which clears up in course of time. It is characterized by irregular fever, dyspnoea, cough, dissociation of the pulse-temperature ratio, and loss of weight. The author met with 15 such amongst 75 cases of undulant fever, and he gives details of ten. In several the physical signs were limited to the apical regions and were very suggestive of tuberculosis, but the bacillus was not found. The difficulty of diagnosis is rendered greater because in undulant fever the organisms may not be obtained from the blood and the agglutination-titre of the serum may be low, whereas, on the other hand, some cases of pulmonary tuberculosis are said to cause agglutination of the *M. melitensis* and the tubercle bacillus may not be discovered. The failure to agglutinate the organism in undulant fever cases, however, is only a transient phenomenon and a repetition of the test will almost certainly give a positive result.

H. Harold Scott.

D'OELSNITZ & LIOTARD. **Quelques essais d'autosérothérapie périodique de la fièvre de Malte.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1924. Apr. 17. Year 40. 3rd Ser. Vol. 48. No. 14. pp. 548–555. With 2 charts in text. [1 ref.]

The various methods of treatment of undulant fever by chemicals, vaccines, autogenous blood and serum have to a great extent proved unreliable. The authors tried a method which they call "periodic autotherapy or autoserotherapy of convalescence." The blood is taken from a patient soon after the end of a pyrexial wave, when the antibodies are supposed to be most abundantly present, the serum is separated, heated at 56° C. for one hour and then injected subcutaneously in doses of 5 cc. for an adult or 2–3 cc. for a child, at the next pyrexial period, every day or alternate days and repeated as required. In the first case reported as much as 60 cc. were given; five cases in all were treated and the charts of two are inserted. The results, as the authors say, are uncertain, useless in some, doubtful in others, but though the effect on the length of the pyrexia is indefinite, yet the effect on the general condition was often favourable. Without observations on a very much larger number of cases no definite deductions can be made. With regard to the mode of action of the serum it is possible that the results are due to the introduction of foreign proteids and are not dependent on specific antibodies at all, which are frequently deficient in this disease. They found that the agglutinating titre was of no prognostic value. The blood counts showed considerable irregularity, but in general there was a marked degree of leucopenia.

[In very anaemic and cachectic cases one would rather shun the abstraction of such large quantities of whole blood for the sake of a problematic improvement.]

P. W. B-S.

HALBRON (Paul). **Etude pratique du diagnostic et du traitement de la fièvre méditerranéenne.**—*Rev. Prat. Malad. des Pays Chauds.* Paris. 1923. Aug.–Sept. 2nd Year. Vol. 3. pp. 5–20. [7 refs.]

The author gives a very readable and interesting description of the clinical characters of undulant fever, emphasizing the difficulties of diagnosis, and the usual inability of treatment to cut short the disease. In one case of his own, treated with various forms of melitensis vaccine, no benefit was observed, but after the inoculation of a different strain of vaccine there appeared to be "shock" symptoms and the case then improved. [It is however, universally accepted that in this fever no generalizations can be made from a single case. The paper contains no new information.]

P. W. B-S.

SÉE (Pierre). **La question de la fièvre de Malte et de son traitement. Revue des travaux récents.**—*Gaz. des Hôpit.* 1924. Mar. 22. Vol. 97. No. 24. pp. 401–404. [27 refs.]

An interesting review of some recent work; contains nothing original.

P. W. B-S.

TYNDALE (W. R.) & VIKO (L. E.). **A Fatal Case of Malta Fever.**—*Jl. Amer. Med. Assoc.* 1923. Dec. 8. Vol. 81. No. 23. p. 1953.

While investigating an epidemic of Malta fever in the goats of South Utah, the State Veterinarian contracted the fever, probably by inoculation from handling the placenta of one of the goats. The fever developed 12 days after, and exhibited a series of definite waves; death occurred about two months after the onset. In this case, however, there was antecedent organic heart disease. *M. melitensis* was isolated from the urine during life, and after death from the spleen. In 1922 two goat herds in the district were reported to have died from a disease said to resemble this.

[No mention is made whether infection of *B. abortus* was excluded.]

P. W. B-S.

KOOSE (Werner). **Eine Laboratoriumsinfektion mit Maltafieber.**—*Cent. f. Bakt.* 1. Abt. Orig. 1924. Apr. 30. Vol. 91. No. 7–8. pp. 493–496. With 1 chart in text. [10 refs.]

A case of laboratory infection with the Kral strain of *M. melitensis*. The incubation was nine days, the course of the case typical but mild. Vaccine treatment was used, commencing with 10 millions and working up to 300 millions.

P. W. B-S.

CASTORINA (Giuseppe). **Un caso di infezione associata paratifo B-melitense.**—*Pediatria.* 1924. Jan. 1. Vol. 32. No. 1. pp. 44–46. [3 refs.]

Case of an infant, 16 months old, at Messina. A blood count gave red cells 3,000,000, white cells 1,800, haemoglobin 50 per cent.; the serum agglutination tests were 1 : 500 for *M. melitensis*, 1 : 500 for paratyphoid B. A blood culture was not made. The symptoms and signs were: diarrhoea, irregular remittent fever, sweats, and a large spleen; there was no eruption. The illness lasted three months and ended in perfect recovery. Antityphoid and melitensis vaccines were used.

[Mixed infections were not infrequently seen in hospital cases before undulant fever was eradicated from the Navy, and the author quotes nine cases in infants from Italian authors.]

P. W. B-S.

D'OELSNITZ, DEGROOTE (G.) & PIN (F.). **Un cas de fièvre de Malte à forme fruste.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1924. Jan. 31. Year 40. 3rd Ser. Vol. 48. No. 3. pp. 67–70. With 1 chart in text.

The authors describe a mild case of undulant fever, lasting about a month, in a man aged 24. The diagnosis was proved by serum agglutination and by blood culture. Only symptomatic treatment was employed. The infection was traced to repeated ingestion of fresh white cheese made from ewe's milk [this is not stated to have been confirmed experimentally]. The occurrence of such mild forms far from the recognised endemic areas should be carefully considered in diagnosing any case of rather prolonged fever.

P. W. B-S.

CASTORINA (G.). **Un caso di infezione da m. melitense con manifestazioni emorragiche.**—*Pediatria.* 1924. June 1. Vol. 32. No. 11. pp. 680–682. [3 refs.]

An interesting case of undulant fever in a child, 3½ years of age, who had been fed, after the first 12 months, on unboiled goats' milk. After a few days' fever there was a profuse epistaxis and punctiform subcutaneous haemorrhages over the whole body surface, more intense on the lower limbs. A vaccine of *M. melitensis* led to a disappearance of the fever and the haemorrhagic spots cleared up. Forty days later there was a return of fever and rash, accompanied this time by transient oedema of the eyelids, hands and feet. 20 cc. of the father's serum was injected and the symptoms again disappeared. There was no concurrent disease, but, as the author remarks, the rash was strongly suggestive of typhus.

H. Harold Scott.

i. BURNET (Et.) & ANDERSON (Ch.). **Importance de la mammite chez les chèvres porteuses de** *M. melitensis.*—*C.R. Acad. Sci.* 1924. Jan. 21. Vol. 178. No. 4. pp. 428–430.

ii. ——&—— **Observation et autopsie de quelques chèvres naturellement porteuses de** *M. melitensis.* **Importance de la mammite.**—*Arch. Inst. Pasteur de Tunis.* 1924. Apr. Vol. 13. No. 1. pp. 7–18. [3 refs.]

i. The authors found that they could rarely isolate the *M. melitensis* from the blood of goats when the milk was infected with the organism. They therefore sought some local centre from which it could pass easily into the milk. Six infected goats were examined, and in only one was there a severe infection of the breasts. Among the five others, all naturally infected, the *M. melitensis* was found in the mammary glands and around. In the "carrier" goats the microbic centres are *par excellence* in the lymphatic glands around the infected mammary gland. In four of the goats, in lactation with infected milk, macroscopic and microscopic evidence was found in the mammary glands of inflammatory lesions. A specific mastitis appears to be the essential fact in a natural infection of goats with the *M. melitensis.*

ii. Most careful pathological and bacteriological examinations were made upon a number of goats naturally and artificially infected with *M. melitensis*, of which the following results are given.

(1) There is no relation between the general health of the goat and the melitensis infection.

(2) The temperature of the infected goats is nearly always normal and gives no indication of the infection.

(3) Amongst the infected goats, agglutination and blood and milk cultures give very inconstant results, and even when the animal is heavily infected the agglutinins may be absent.

(4) Even after very heavy experimental inoculations the blood may remain sterile.

(5) With the infected goats the serum, subcutaneous and thermal reactions are very uncertain and of little diagnostic value.

(6) There is no constant relation between the infected goat and the leucocyte content in the milk.

(7) It is remarkable that a goat inoculated and reinoculated with strong doses of *M. melitensis* is so easily able to destroy or eliminate the virus and that this is only found in the lymphatic glands.

(8) The conclusion formed from these and previous observations is that "the mastitis is the essential factor in goats suffering from a *M. melitensis* infection."

From these observations upon infected animals the authors show that in goats the infection quickly becomes localized and is practically limited to the mammary regions instead of being a widespread septicaemia as has been generally described in man and other infected animals. According to ZAMMIT the infection is abundant and persistent. [It would be interesting to note in these Tunisian goats where the organism becomes localized in male animals.]

P. W. B-S.

SDRODOWSKI (P.). **Maltafieber in Aserbeidshan.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Jan. Vol. 28. No. 1. pp. 2–7. With 5 charts. [2 refs.] and *Rev. Microbiol. et Epidémiol.* Saratov. 1923. Vol. 2. Nos. 3–4. In Russian pp. 1–25. With 3 charts. [25 refs.] German summary pp. 101–102.

It is pointed out that infection in the guineapig with the *M. melitensis* is very like that seen in man, whereas in the rabbit it is more chronic without special characters except serum reactions and is analogous to what is found in the goat.

In the human cases the *M. melitensis* was found in the blood, urine, and pus, and was strongly agglutinated with the patients' serum, 1 in 200 to 1 in 3,000; in 150 cases of other diseases used as controls the agglutination was never above 1 in 100, and this was taken as the minimum dilution. From his animal experiments the author considers it possible that the Caucasian microbe is a biological variety of *M. melitensis*, Bruce, and should be placed in the para-melitensis and *B. abortus* group.

It is noted by the editor of the German version that rabbit serum derived from an animal inoculated with this Caucasian type and sent to Hamburg, though three months on the road, gave good agglutination up to 1 in 3,000 with the stock *M. melitensis*.

P. W. B-S.

MARICH (F. Rizzo), SULTANA (Alexander) & MIFSUD (Victor J.). **Research on the Active Immunization of Goats against** *Micrococcus melitensis* **Infection by Means of a Prophylactic Vaccine.**—6 pp. 1921. Malta: Govt. Printing Office.

Some very carefully organized investigations on the immunization of goats by prophylactic vaccines were carried out by the authors. Great care was taken to utilize clean goats with a sufficient variety of recently isolated, virulent strains of *M. melitensis*, and also one of *M. para-melitensis*. The experiments were divided into two series, with large doses of unheated and heated vaccines respectively. The authors used first a strong dose for the inoculation test, and later one with half the amount; in both instances the prophylactic power of the vaccines was unsatisfactory, no complete immunization being produced. Very full tables give the details of the experiments. As the vaccines used

did not immunize the goats against the experimental infections the authors conclude that the method is unlikely to be of practical utility.

[These results are disappointing in view of the work done on the same lines by Prof. VINCENT, which in France is considered to be of great practical importance.]

P. W. B-S.

BEVAN (L. E. W.). **Infectious Abortion of Cattle and its Possible Relation to Human Health.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1922. Jan. 19. Vol. 15. No. 7. pp. 215–231.

At a meeting of the Southern Rhodesia Veterinary Association in Nov. 1921 the author read a very important paper on the danger to animals and man through infection with *B. abortus* Bang, The abortus disease was first epidemic at Salisbury in 1906, and at the date of the paper was said to be prevalent in cattle belonging to both Europeans and natives throughout the country. This not only affects the population economically, but there is definite evidence that the disease is spread from the cattle to mares, swine, sheep and goats; moreover, it may affect man. Full value is given to the fact that in the many endemic areas all over the world where the abortus disease is common in cattle, undulant fever in man is rarely or never found; even in the Marandellas district where the abortus infection had been prevalent since 1914 it was not until 1921 that suspected human cases were notified. In his description of the relationship of the organism in its cultural and serum reactions to *M. melitensis* the author agrees with EVANS and MEYER. He suggests that there are different strains of *M. melitensis*, and it is conceivable that there may be a certain overlapping of strains of the two organisms. The clinical and pathological characters of the disease in animals are well described, and in infected guineapigs the peculiar tubercular-like condition of the spleen is noted as has recently been reported by BURNET.

The common sources of infection are given and the methods for prevention which have been recommended and put into practice are detailed, chiefly vaccination to produce immunity, and the destruction of heavily infected animals. At first a devitalized heated vaccine was used, but this has been replaced by a non-heated vaccine sterilized with chloroform, devised by the author.

The conclusions arrived at are so clearly expressed that they are here quoted in full:—

"1. The disease known as infectious abortion of cattle, which exists in Southern Rhodesia, is caused by the *B. abortus* of BANG, and serological tests indicate that it is identical with the specific abortion of cattle in other parts of the world.

"2. The *B. abortus* of BANG bears a close morphological and biological resemblance to the *M. melitensis*. Serological tests also indicate a close affinity, in that certain strains of *M. melitensis* can be agglutinated with serum from cattle infected with infectious abortion, and strains of *B. abortus* can be agglutinated by serum from human patients suffering from undulant fever.

"3. The characteristic symptom of undulant fever in goats and sheep is abortion.

"4. Certain cases presenting symptoms resembling undulant fever have occurred in Southern Rhodesia in men who, as far as is known, have not obtained infection from goats, but have resided on farms where animals are or have been infected with infectious abortion.

"5. It is suggested that these cases are suffering from an infection caused by the *B. abortus* of cattle.

"6. It is also suggested that human females may contract infectious abortion through the ingestion of the organism in milk and dairy products from infected cows.

"7. Although infectious abortion is prevalent in other parts of the world where goat's milk is not used for human consumption, it has not been accused of causing the symptoms of undulant fever in man, nor has it been proved to cause abortion in human subjects.

"8. Although infectious abortion has prevailed in the Marandellas District for many years, it is only within the last few months that cases resembling undulant fever in man have been recorded.

"9. While circumstantial evidence points to the infection of man by the *B. abortus* of BANG, and scientific tests up to a point support this suspicion, the final proof is not yet available.

"10. If infectious abortion of cattle is essentially a bovine disease, a grave responsibility attaches to the Veterinary Department; and if this disease is communicable to man, a hearty co-operation between the medical and veterinary professions is necessary in dealing with it."

P. W. B-S.

BEVAN (L. E. W.). **Malta Fever and Epizoötic Abortion.** [Correspondence.]—*Lancet.* 1924. Apr. 26. p. 873. [1 ref.]

The author very rightly claims priority for the suggestion that *B. abortus* is able to cause human as well as animal infections. Further experience has demonstrated that cases simulating undulant fever are now not uncommon in Rhodesia and occur sporadically, generally one in a family, which does not favour the idea of ordinary milk infection. The cases of pyrexia are probably often very mild and only detected by their after agglutination reactions, as suggested by EVANS.

P. W. B-S.

ORPEN (L. J. J.). **The Connection between Undulant (Malta) Fever and Contagious Abortion.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1924. Feb. 21. Vol. 17. No. 8. pp. 521–524.

——. **A Note on the Connection between Contagious Abortion and Undulant (Malta) Fever in Rhodesia.**—*S. African Med. Rec.* 1924. Feb. 23. Vol. 22. No. 4. p. 75.

Both infectious abortion in cattle and undulant fever in man are present in Rhodesia, and it was thought that the two might be due to the same organism. The micro-organism was isolated from human cases. With the different organisms and specific serum prepared from European and Rhodesian cases of undulant fever and of *B. abortus* a series of absorption tests were carried out. These showed that the European *M. melitensis* and *para-melitensis* could be distinctly divided from the Rhodesian melitensis and abortus, and that the two latter are identical. The question arises, why has the usually non-pathogenic *B. abortus* become pathogenic to man? Is it by passage through certain animals that the virulence has been raised? The author places the *M. melitensis* of Europe and Rhodesia with the *B. abortus* in one genus, which produces an undulant fever in man under favourable conditions.

He finds also that the Rhodesian organism is closely related to certain members of the coli-typhoid group, especially to *B. faecalis alcaligenes.* [The conditions that are present in parts of America are in many ways analogous to those found in South Africa.]

P. W. B-S.

EVANS (Alice C.). **Malta Fever. Cattle suggested as a Possible Source of Infection, following a Serological Study of Human Serums.**—*Public Health Rep.* 1924. Mar. 14. Vol. 39. No. 11. pp. 501–518. [33 refs.]

It has been shown that simple agglutination tests will not differentiate between the melitensis and abortus varieties of *Br. melitensis* (Evans) and that there are many instances known where goat's milk as a source of infection could not be traced and cow's milk seemed the more possible origin. The author discusses this, and quotes a case in which the infective organism was believed to be of the bovine type. The titre of agglutination necessary for a positive finding is also discussed. Human serum from 500 patients suffering from a variety of diseases other than undulant fever were tested with melitensis antigens, with the following results :—43 were positive with 1 : 5 dilution, 11 with 1 : 10, 2 with 1 : 20, 2 with 1 : 40, and 1 with 1 : 320. Inactivating the sera did not reduce these totals. It would seem then that 3 out of 500 should be classed as cases of undulant fever (past or present) and 2 others with 1 in 20 as doubtful. [The reviewer would not accept the lower dilutions.] It must be always recollected that in some cases the agglutinative response may be almost absent, and a negative laboratory finding does not therefore negative undulant fever. The author suggests that all these 58 positive serum reactions were produced as a response to *B. melitensis* ingested in raw cow's milk, although such an infection may not necessarily have caused appreciable illness.

P. W. B-S.

KEEFER (Chester S.). **Report of a Case of Malta Fever originating in Baltimore, Maryland.**—*Bull. Johns Hopkins Hospital.* 1924. Jan. Vol. 35. No. 395. pp. 6–14. With 1 chart. [55 refs.]

A case of fever of undulant type occurred at Baltimore, in which blood culture demonstrated an organism of the Melitensis type giving by absorption tests the characters of *B. abortus.* The source was thought, though not proved, to be bovine rather than caprine. The patient was treated with specific vaccine given repeatedly over a prolonged period without any benefit. The details of the case are very well reported ; the terminology of EVANS is used for the organism (*Brucella melitensis* var. *abortus*). As this is the first recorded case of a disease in man of undulant fever type due to an organism of the abortus group, it is of very considerable importance and interest.

[The serum of this case was used by EVANS in a series already reported on, and in the absorption experiments was one of the two human sera which were placed in the group *Br. Melitensis* A. (*Brucella melitensis-abortus*) with bovine and porcine strains. With *M. melitensis* the patient's serum gave positive agglutination to a titre of 1 in 20.]

P. W. B-S.

AURICCHIO (Luigi). **Richerche sul'laffinità tra** *B. abortus* **e** *B. melitensis.* **Tentativi d'immunoterapia con** *B. abortus* **nell'infezione da** *B. melitensis* **nell'infanzia.** [Researches on the Relations between *B. abortus* and *B. melitensis.* Experiments in the Treatment of Melitensis Infection in Childhood with *B. abortus.*]—*Pediatria.* 1924. Jan. 15. Vol. 32. No. 2. pp. 57–68. [16 refs.]

Four lines of research were carried out :—1. Agglutination, complement fixation and the intradermal reaction were tested with *B. abortus* antigen in children to whom had been administered melitensis vaccine ; 2. The reverse of the last—the results with *melitensis* antigen in children vaccinated with *B. abortus* ; 3. Reactions with *abortus* antigen in children spontaneously infected with *B. melitensis* ; 4. Treatment of *melitensis* infected children with *B. abortus* vaccine.

For the agglutination and complement fixation tests suspensions in normal saline of a 24 hours' culture of the organism on agar were employed. For the intradermal reactions suspensions of bacterial proteins—" abortina " or " melitensina " respectively—obtained by the methods of FLEISCHNER and MEYER. 0·002 mgm. in 9·1 cc. normal saline gave a distinct reaction, and even less would at times suffice.

Of six healthy children three were vaccinated with *B. melitensis* and three with *B. abortus.* Treatment of melitensis infection by *B. abortus* was carried out in 15 instances. For the third object of research tests were performed on 18 children.

Briefly, the results of the first two lines of research proved positive in all instances. As regards the third, in children with undulant fever, the results were not always the same. The intradermal reactions showed no difference, but the serum tests with *B. abortus* were more definite and constant than with the melitensis organism. Cases of undulant fever rapidly yielded to treatment with abortus vaccine, quite as well as with one of melitensis. The following facts, however, that anti-melitensis serum agglutinated *B. melitensis* and *B. abortus,* that anti-paramelitensis serum agglutinated *B. paramelitensis* and *B. abortus,* while anti-abortus serum agglutinated all three without distinction, show that from a serological point of view the *B. abortus* has a less differentiated antigenic action than *B. melitensis,* and, though the organisms are very closely allied, the results do not warrant their being considered as identical.

H. Harold Scott.

KHALED (Z.). **A Comparative Bacteriological Study of Bovine Abortion and Undulant Fever.**—*Jl. of Hyg.* 1924. Mar. Vol. 22. No. 3. pp. 335–342. [5 refs.]

The author confirmed his previously reported experiment that intravenous inoculations of *B. abortus* were able to protect a monkey from subsequent infection with *M. melitensis* [see this *Bulletin,* Vol. 19, p. 351]. Further experiments on these lines with two goats showed that a solid immunity could be conferred on the animals by inoculation of an organism of low virulence (*B. abortus*) against one of high virulence, *M. melitensis.* The immunized goats appeared well, but gradually ceased to give milk ; the control animal showed marked constitutional symptoms and acute mastitis. Post mortem the organism

was not recovered from the immunized animals and there were no pathological changes. In the control animal the *M. melitensis* was recovered repeatedly from the blood and milk before death, and was isolated also at the autopsy.

These results being so definite, the use of a vaccine made from *B. abortus* was indicated for treatment of undulant fever cases, as it would be possible to administer much larger doses of the antigen than of the more toxic *M. melitensis*. Three cases so treated are reported, and the results are encouraging, the dose varying from 500 million to 2,000 million per cc.

[Though the number of cases treated is very small, the practice may be of great utility. In the case reported by KEEFER the autogenous *Br. melitensis abortus* vaccine was not successful.]

P. W. B-S.

BURNET (Et.). **Le microbe de l'avortement épizootique** (*B. abortus*) **vaccine l'homme et le singe contre le microbe de la fièvre méditerrananéenne** (*M. melitensis*).—*C.R. Acad. Sci.* 1924. Jan. 2. Vol. 178. No. 1. pp. 154–156. [1 ref.]

In five experiments, previously reported, the author has shown that *B. abortus* is not pathogenic to man ; in two experiments now described he proves that it is not pathogenic to Macacus monkeys but that living cultures of *B. abortus* are able to vaccinate (protect) man and monkey against undulant fever.

P. W. B-S.

DENGUE, PAPPATACI AND UNCLASSED FEVERS.

TASCON (Jorge H.). **El dengue en Buga.**—*Repert. Med. y Cirug.* Bogota. 1924. Feb. Vol. 15. No. 5. (No. 173.) pp. 242–251.

Buga is 1,001 metres above sea-level ; the temperature varies between 18° and 32° C. During 1923 some 70 per cent. of the 18,000 inhabitants were attacked by dengue. Accurate figures are not obtainable because the disease is not notifiable. The incubation period proved to be about five days. The cases were of average severity and there were no deaths. In some the gastro-intestinal manifestations were marked—severe, intractable vomiting, occasionally black vomit, diarrhoea and abdominal pain. A few patients exhibited dyspnoea and precordial pain and there was a tendency to haemorrhage.

The author states that the disease should be made notifiable because it is usually the precursor of epidemics of yellow fever. This is significant in view of the previous statement that two of the patients had haematemesis towards the later stage of the illness.

[There appears to be some doubt as to the diagnosis of these cases.—P. W. B-S.]

H. Harold Scott.

DE SOUSA (Domingos Roque). **A epidemia da Dengue na India Portuguesa.**—*Bol. Ger. Med. e Farmacia.* Bastora. 1924. Jan. Vol. 9. No. 1. pp. 11–12.

This is a brief record of an epidemic of dengue in Pangim which prevailed from June to November [? 1923], attaining its height from the middle of August to the end of September. About half the population was attacked, but the spread was not so rapid as in previously reported epidemics. In some instances 10 to 25 days would elapse between two cases in the same family. There were no fatalities.

H. Harold Scott.

DUVAL (Charles W.) & HARRIS (William H.). **Studies upon the Etiology of Dengue Fever : Preliminary Report.**—*Southern Med. Jl.* 1924. Feb. Vol. 17. No. 2. pp. 106–108. [5 refs.]

These studies, based on typical cases, were made during an epidemic of dengue in the Gulf region of the United States in the summer of 1922. The blood of 16 cases was used for animal inoculation, 215 guineapigs being used for the initial transmissions ; 87, representing 10 cases, reacted in a characteristic manner—pyrexia after three to five days, a secondary rise, and a concomitant leucocytic fall (the leucocytic count in guineapigs is very variable). No evidence of a causative organism was found by dark ground illumination or by culture. It is noted that the lymphatic tissue of infected guineapigs underwent a marked hyperplasia and that the recovered animals developed an immunity to many times the infective dose of the virus. The virus could be maintained in a virulent form in guineapigs through many passages.

P. W. Bassett-Smith.

JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE. 1923. Oct. Vol. 9. No. 4. pp. 285–297; 1924. Jan. Vol. 10. No. 1. pp. 24–34. **Naval Medical History of the War. Section of Tropical and Sub-Tropical Medicine. Part V.**

(i). **Dengue or Seven-Day Fever.** [BASSETT-SMITH (P. W.).] p. 285.

There were eight cases of dengue reported from Hong Kong in 1914, and 108, mostly contracted in Bombay, from the East Indies. In 1915 there were 313 cases, eighty of which were treated in Bermuda. The epidemic commenced in July and spread with great rapidity. In 1916 the total cases numbered 70 and in 1917, 122.

(ii). **Phlebotomus or Sand Fly Fever.** [BASSETT-SMITH (P. W.).] pp. 285–286.

Several extensive epidemics were noted in the Eastern Mediterranean. H.M. Hospital Ship *Rewa* accounted for 259 cases in 1916, and 221 were treated at Mudros Hospital in 1917.

(iii). **Phlebotomus Fever in the Eastern Mediterranean during the War, with Special Reference to its Prevention.** [MORRIS (Leslie M.).] pp. 286–289.

This fever caused a considerable amount of sickness in camps at Mudros, Suda Bay in Crete, and in Mitylene. It is described as a "foreshore disease." The typical sand-fly soil is ochreous and very friable. Camps situated on such soil were usually immune for the first summer, but suffered subsequently; in other words, breeding places for the sand-fly were artificially constructed in a favourable soil. The prophylaxis consists in avoidance of unsuitable localities. This was put to the test in 1918 in Mudros when the whole personnel of the R.N.A.S. camp was removed to a new site on hard ground, half a mile from the foreshore, and remained free from fever for the remainder of the summer. All huts should be well raised from the ground, thus allowing free ventilation, and the ground beneath should be sprayed with a mixture of crude oil and paraffin weekly. The most suitable deterrent ointment was Price's Solid Anti-Mosquito Preparation. The best treatment is to administer full doses of opium at the onset of fever and to continue 5-8 min. doses of tinct. opii combined with mag. sulph. t.d.s. Quinine is useless and only aggravates the symptoms.

(iv). **Phlebotomus Fever.** [LAMBERT (J.)]. pp. 289–297; 24–31. With 11 charts. [20 refs.]

This study made at Mudros supplements the paper of MORRIS reviewed above. 237 cases were noted, but this is short of the true total; only three occurred on the west side of the harbour. The population of these camps was very susceptible, being composed of young recruits or boys undergoing training. The men in ships in the harbour remained practically free from the disease. On close sultry nights sand-flies were most numerous. As the incubation period of the disease is two to four days and the period of development of the virus six to eight, the number of cases was usually greatest about 12 days after such a calm, whereas the admissions dropped considerably after a period of strong breezes. The incubation period appeared to be within six days; in one case under observation from the time of being first bitten it was only three. The symptoms are well described. The face and neck rapidly become congested; and sometimes circumoral pallor is noticeable. The highest temperature recorded was 105·6°F. The pulse rises at first but not in proportion to the temperature. The

eyes rapidly become congested and the palate in 15 per cent. of cases. Rashes were not seen. Bradycardia is very common as the temperature drops during convalescence. Blood-counts showed a leucopenia of 4–5,000.

The pyrexia of phlebotomus fever may be classified under the following types :—

(*a*) Falling to normal by a direct line or curve.
(*b*) An indirect fall by lysis.
(*c*) A fall with definite recrudescence of temperature before reaching normal.
(*d*) A fall with recrudescence after the temperature has reached normal.

The synonym " three-day fever " is somewhat misleading, as the duration of the pyrexial period may vary from two to eight or nine days. This statement is borne out by a comparative table of a large number of cases from Malta and from India (Naushera).

The maximum temperature was reached on the first day in 21 per cent. of cases, on the second day in 63 per cent., on the third day in 14 per cent. and on the fourth day in 2 per cent. With temperatures higher than 102°F. there is a lagging of the rise of pulse-rate. The resemblance between the recrudescence of temperatures in this fever and in dengue is a very close one, but in no case was there any recurrence of pain or eruption of rash. About 11 per cent. of cases passed through two separate attacks of fever in the same season. It would probably be correct to say that in 90 per cent. of cases immunity is produced.

The usual eruption produced by the bite of phlebotomus is a papule, though, rarely, a small haemorrhagic spot marks the bite. The papules are usually carmine pink to dull red in colour. Urticarial forms of rash are not uncommon. In very susceptible persons a vesicular eruption is produced. The lesion produces a good deal of irritation and secondary staphylococcal infections may ensue.

(v). **Notes on Cases of Phlebotomus Fever at an Island in the Eastern Mediterranean.** [Higgins (J. T. D. S.).] pp. 31–34.

Consists of a detailed account of eight cases of phlebotomus fever of which six occurred in one house.

P. H. Manson-Bahr.

Whittingham (Harold E.) & Rook (Alan F.). **The Prevention of Phlebotomus Fever.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. Nov. 15. Vol. 17. No. 5. pp. 290–330. With 20 figs. & 10 charts. [6 refs.]

In this very interesting paper the results of a painstaking investigation carried out at Malta are fully set out. The authors remark that " a sound knowledge of the habits and habitat of the Phlebotomus is the keystone to successful prophylaxis," and they have advanced our knowledge very considerably on these points. The insects as shown are able to get into buildings through any minute opening, gather in sheltered corners and find cobwebs a considerable protection. Some individuals are very voracious feeders, drawing blood as many as 12 times. After 5 to 14 days the females escape outside and lay their eggs.

The chief prophylactic measures were (1) War on the insect in its various phases, with the abolition of breeding grounds and destruction

of the adult flies. (2) Prevention of biting by removal of hiding places and use of nets, repellants, and air currents.

For the first, levelling the ground and making it impermeable, facing and pointing the walls were most important outside ; swatting and spraying with 1 per cent. cresol most effective inside. Fumigation was of little use. For the second, destruction of the flies by personal efforts, thorough cleanliness of rooms, efficient ventilation, and removal of all refuse. Men are recommended not to wear slacks after sundown nor to bathe after dusk ; to use sandfly-proof nets (45 meshes to the square inch) round beds, and repellants such as camphor in the beds. Great importance is attached to the use of natural air currents as far as possible and the liberal use of fans. At Calafranca by these means, in 1922, the incidence of sandfly fever was reduced by one half. There are a very large number of tables, charts, and diagrams, which render the report very complete and show the thoroughness of the investigation.

P. W. B-S.

DAS (Jahar Lal). **A Short Note on an Outbreak of Three-Day Fever in Patna.**—*Indian Med. Gaz.* 1924. Feb. Vol. 59. No. 2. pp. 86–87.

An epidemic of a short fever occurred during June 1923, in which the diagnosis between influenza, dengue, and phlebotomus fever was difficult. The majority of the cases were of a simple three day type ; some lasted longer or had a secondary rise, but in no case was an exanthem noticed and respiratory symptoms were absent. A similar epidemic occurred in 1922, and on both occasions sand flies were abundant. [The Editor of *Indian Medical Gazette* states that the fever conforms with what he calls " sandfly dengue "].

P. W. B-S.

GARIN (Ch.). **Fièvre méditerranéenne à pappataci.**—*Rev. Prat. Malad. des Pays Chauds.* 1924. Jan. Year 2. Vol. 3. No. 5. pp. 349–358.

The author gives a very clear description of the short fever which was common in the Eastern Mediterranean during the war, variously described as Phlebotomus fever, Mediterranean dengue, etc., spread through the agency of *Phlebotomus papatasii.* He recognizes it as distinct from dengue, and from its clinical course believes it to be of spirochaetal origin. He, however, makes a mistake in stating that " dandy fever " and " breakbone fever " are English synonyms for it. He states that in the Macedonian epidemic of 1916 a rubeoloid exanthem was only found in 10 per cent. of the cases and appeared late in the disease, thus differing from that of dengue.

P. W. B-S.

MEGAW (J. W. D.). **The Typhus Group of Fevers.**—*Indian Med. Gaz.* 1924. Feb. Vol. 59. No. 2. pp. 68–79. With 2 figs. & 3 charts. [5 refs.]

This lengthy paper is a reiteration and development of the author's view on the " typhus-like " group of fevers (see this *Bulletin*, Vol. 9, p. 489 ; Vol. 19, p. 678), and in particular the series of cases that has occurred in the Kumaon hills. The " carrier " of this fever is in all probability a tick, possibly the *Rhipicephalus sanguineus* found by the

author in the act of biting while he was at Bhim Tal. Two views of Bhim Tal and Sat Tal are given, showing the extremely wooded character of the neighbourhoods, and charts of the various types of "typhus-like" fevers emphasizing their similarity in course and duration; a table gives categorically the characters of louse-borne, tick-borne and mite-borne typhus on the one hand, and six endemic varieties in which the carrier is not as yet known for certain; this last group includes Kumaon, South African, Nigerian, Mossman, Adelaide and Deli types of typhus-like fevers [to which should be added the Alabama group (see below) in which the Weil-Felix reaction was present]. Much of the material of this paper is old, and there is a good deal of second-hand information, but it brings the present knowledge of this group of continued fevers with a definite exanthem well up to date and is very interesting.

[The possible implication of the *Rhipicephalus* tick as a carrier opens up a fresh field of research, to demonstrate the presence in it of spirochaetal or rickettsia bodies as etiological factors.]

P. W. B-S.

MAXCY (Kenneth F.) & HAVENS (Leon C.). **A Series of Cases giving a Positive Weil-Felix Reaction.**—*Amer. Jl. Trop. Med.* 1923. Nov. Vol. 3. No. 6. pp. 495–507. With 1 chart. [8 refs.]

In June 1922 a case of 14 day fever, with macular rash, occurred at Montgomery, Ala. The blood when tested gave a positive Weil-Felix reaction. The case was therefore diagnosed as typhus or Brill's disease, though there was no evidence of louse infestation or of endemic typhus. During the next *eight months, 12 other cases* very similar in character were investigated, in none of which could louse infestation be traced. The disease differed from typhus clinically in its mildness, polymorphous character of the eruption, fever ending in lysis rather than crisis, and the blood showing a leucopenia. In 11 of the 13 the Weil-Felix reaction was positive; the other two were only tested once early in the disease. Dengue, to which the disease bore a considerable clinical resemblance, was ruled out by the uniformly long duration of the fever, and the fact that in 13 cases of definite dengue tested at the time the Weil-Felix reaction was always negative [the first record of this reaction in this disease].

On clinical and serological grounds the diagnosis of Brill's disease or mild typhus seemed to be the most probable, but the mode of spread and distribution of the cases is difficult to explain.

[The series of cases has considerable resemblance to those described from Adelaide, Australia, and would be included in the "typhus-like fever" group with vector of doubtful origin for which further research is required.]

P. W. B-S.

KHALED (Z.). **Parenteric Fevers in Egypt.**—*Jl. of Hyg.* 1923. Aug. Vol. 21. No. 4. pp. 362–375. With 3 charts. [17 refs.]

From material gathered at the Hygiene Institute, Cairo, in 1922, the author carried out a most useful investigation on the etiology of the enteric-like fevers of the Egyptian area. This examination of more than 1,000 cases showed that of this number that were clinically typhoid only 11·7 per cent. proved to be enterica and that 10 per cent.

were due to *B. asiaticus* (112), leaving the astonishing number of 78 per cent. to other causes. These might be *B. pseudo-asiaticus*, *B. faecalis alcaligenes*, *B. carolinus*, Morgan No. 1 and others. Thus there is still a wide field for investigation which the author proposes to explore. This report, in particular, has very considerably advanced our knowledge of the epidemiology, aetiology and symptoms of the fever due to *B. asiaticus* Castellani. The author shows that all ages may be affected, that the disease is widely spread in the East, and that its seasonal occurrence is very like that of typhoid. Though the mortality is slight it is an important and distinctive disease, due to a definite micro-organism easily cultured from the blood and stools and belonging serologically to the Paratyphoid Gaertner subgroup. A useful table of the fermentive actions of the Typhoid-Coli group is given, which shows that *B. asiaticus* ferments glucose and saccharose but not lactose and dulcite.

The importance of early blood cultures in all suspected enterica cases is emphasized; a positive finding, with the development after a time of a high degree of immune bodies in the blood, renders the diagnosis certain.

As the number of the different causative organisms increases the laboratory diagnosis of these enterica-like fevers is bound to become more laborious and protracted; nevertheless the advantage of such co-ordinated work as we have here between the clinician and the laboratory is absolutely necessary to unravel the etiological tangle of these associated fevers.

P. W. B-S.

DE LANGEN (C. D.) & VAN LOON (F. H.). **The Dominating Symptoms of the Nervous System in Van der Scheer's or Five-Day Fever (Astheno-Neuralgic Fever).**—*Meded. Burgerlijk. Geneesk. Dienst in Nederl.-Indië.* 1923. Part 3. pp. 305–315.

The five-day or Van de Scheer's fever is the short non-classed fever with which the authors are most familiar, and they discuss it chiefly from a neurological point of view. They appear to look upon the pains and many of the symptoms as evidences of a neuritis, and not a myositis, associated with asthenia. They give some reasons for believing that there is a retardation of the currents along the nerves [as has also been described in beriberi]. They state that the nerve symptoms are so striking and frequent as to give great assistance in diagnosis, and draw attention to a disease found in Cochin China described as "astheno-myalgic fever" by Noel BERNARD which is thought to depend etiologically upon the *Bacillus asthenogenes*. This fever is probably similar to the five-day fever and they suggest that the name "astheno-neuralgic fever" would be more appropriate for both.

P. W. B-S.

BRADLEY (Burton). **The Diagnosis of Dengue Fever.** [Correspondence.]—*Med. Jl. Australia.* 1923. Mar. 24. 10th Year. Vol. 1. No. 12. p. 335.

FOURCADE (A.). & LE BOURDELLÈS (B.). **Deux cas d'infections paratyphiques à bacilles d'un type aberrant.**—*Arch. Inst. Pasteur d' Algérie.* 1923. Vol. 1. No. 1. pp. 4–7. [4 refs.]

HEHIR (Patrick). **Typhus Fever in Greek Refugees.**—*Ann. Trop. Med. & Parasit.* 1923. Oct. 13. Vol. 17. No. 3. pp. 347–358. [2 refs.]

THURSTON (E. Paget). **The Differential Diagnosis of Dengue Fever and Influenza.**—*Med. Jl. Australia.* 1923. Mar. 3. 10th Year. Vol. 1. No. 9. p. 227.

ROCKY MOUNTAIN FEVER.

WOLBACH (S. Burt) & SCHLESINGER (Monroe J.). **The Cultivation of the Micro-Organisms of Rocky Mountain Spotted Fever** (*Dermacentroxenus rickettsi*) **and of Typhus** (*Rickettsia prowazeki*) **in Tissue Plasma Cultures.**—*Jl. Med. Res.* 1923. Dec. Vol. 44. No. 2. (Whole number 191). pp. 231–256. With 1 plate and 1 text fig. [6 refs.]

It is impossible to do more than outline this interesting and detailed description of the process of cultivation of the minute micro-organisms known as *Dermacentroxenus rickettsi* and *Rickettsia prowazeki*; it should be read in extenso. The culture media used were guineapig testis in specially prepared guineapig plasma for Rocky Mountain fever, and brain substance in plasma for typhus. The authors were able to carry out many subcultures showing the organisms already often described. Under the conditions of the experiments both micro-organisms survive only within the cells, and are capable of multiplying only within those cells that are of endothelial origin. They do not multiply or persist in the plasma, and the infected cells die, but it is not clear by what mechanism the organisms pass from cell to cell.

There is a good plate showing the infecting organisms in infected cells.

P. W. Bassett-Smith.

SPENCER (R. R.) & PARKER (R. R.). **Rocky Mountain Spotted Fever: Viability of the Virus in Animal Tissues.**—*Public Health Rep.* 1924. Jan. 11. Vol. 39. No. 2. pp. 55–57. [3 refs.]

The authors were able to preserve the virus of Rocky Mountain fever, without loss of virulence, in glycerine kept at – 10°C. for more than 10 months. The best tissue for the purpose was the testicle of infected guineapigs, and this tissue-virus could be dried in vacuo, remaining effective for two months at –10°C.

P. W. B-S.

HAYASHI (N.) & TAKEUCHI (N.). **An Etiological Study on Rocky Mountain Spotted Fever.**—*Aichi Jl. Experiment. Med.* Nagoya. 1923. Mar. 31. No. 1. pp. 69–74. With 5 plates. [9 refs.]

The authors have minutely studied material from a case of Rocky Mountain fever and animals inoculated from it, and they draw attention to the similarity of the symptoms, eruption, and mode of transmission of this disease, tsutsugamushi disease, and typhus. Three kinds of organisms were found in their material, namely (1) long spirochaetal forms, (2) bent rods, and (3) coccoid, diplococcoid, and double lanceolate forms very similar to those described by RICKETTS and WOLBACH in this disease and to *Rickettsia prowazeki* of typhus. The authors consider that all three forms are stages of a single organism and that they are the cause of Rocky Mountain fever. Since monkeys immunized to tsutsugamushi disease were not protected from fever when inoculated with these bodies, they conclude that the two diseases are distinguished one from another by their immunity reactions. Five good plates illustrate the paper.

P. W. B-S.

JAPANESE RIVER FEVER.

FAUST (Ernest Carroll). **The Possible Incidence of River Fever (Tsutsugamushi Disease) in the Central Yangtze Valley.**—*China Med. Jl.* 1923. Dec. Vol. 37. No. 12. pp. 979–987. With 16 figs. [7 refs.]

Two cases from Wuhan of primary *Schistosoma japonicum* infection showed in smears from the blood and spleen minute rod and spheroidal bodies, the cytoplasm of which stained azur and the nuclear elements brick red with Giemsa. There was also marked anaemia, leucopenia, and diminished coagulability of the blood. The bodies were found in the red cells, in the lymphocytes, and free in the plasma. Their presence together with certain clinical symptoms suggested a diagnosis of tsutsugamushi disease, and more careful study of cases of splenomegaly of obscure origin in the Yangtze valley is necessary, particularly as according to KITASHIMA and MIYAJIMA (1918) this disease was known in ancient times in China. The photographs of the blood and drawings given of this organism under the name of *Theileria tsutsugamushi* are not good.

P. W. Bassett-Smith.

SELLARDS (Andrew Watson). **The Cultivation of a Rickettsia-like Micro-Organism from Tsutsugamushi Disease.**—*Amer. Jl. Trop. Med.* 1923. Nov. Vol. 3. No. 6. pp. 529–546. With 1 plate. [11 refs.]

After giving a general summary of the clinical characters and the experimental work of KITASHIMA and MIYAJIMA in Japan,* the author describes his own investigations made in Japan in 1922. Haemorrhages were found after inoculation in guineapigs and monkeys, analogous to these found in man, mostly in the lymph glands, and as petechiae in the skin. Cultures of Rickettsia-like bodies were grown anaerobically at 37°C. and were subcultured without much difficulty, though growth was feeble except with the use of Martin's agarchocolate media. Inoculations from these produced similar lesions to those seen when using the ordinary virus. The pleomorphism of the organism, well shown in a plate, was similar to that previously described, but our knowledge is at present insufficient to classify definitely, but the organisms appear to differ from ordinary bacteria and require a grouping of their own, the term Rickettsia being retained. Clinically the author includes trench fever in the group, with Rocky Mountain spotted fever, typhus and tsutsugamushi disease and suggests that for the latter type of organism the name *Rickettsia nipponica* should be used.

P. W. B-S.

* See this *Bulletin*, Vol. 13, p. 342, but the second part of this important paper embodying the experimental work escaped notice.

MISCELLANEOUS.

CALCUTTA. **Annual Report of the Calcutta School of Tropical Medicine, Institute of Hygiene and the Carmichael Hospital for Tropical Diseases for the Year 1923.** [MEGAW (J. W. D.), Director and Professor of Tropical Medicine.] 86 pp. With 16 figs. [Date and place of publication not stated.]

It is evident from this most interesting document that the Calcutta School of Tropical Medicine is now settled and harmoniously compacted and is working full-time both on its educational side and in many fields of original research. It is also giving play to a sound proselytizing instinct—destined, if encouraged, to raise the whole tone and level of medical education in India—in its endeavour to attract officially-accredited students from other provincial governments, in the hope that these students after their training may form centres of instruction in their own native Provinces. This is the true spirit—far above meretricious propaganda.

The School provides annually three courses of instruction, namely, a six months' course for its own D.T.M.; a three months' course in the accurate diagnosis and modern treatment of tropical diseases, for men who have no need or desire for a special diploma; and a course for the D.P.H. of the Calcutta University and other academic corporations, the instruction in bacteriology, protozoology, entomology, and helminthology being the same for this last course as for the D.T.M.

The facilities for instruction, as also for original work, are ideal, since the Carmichael Tropical Diseases Hospital, with its 100 beds and its large and already popular out-patient department, is in intimate propinquity to the School and is directed and administered by the School staff. During the year in review the number of in-patients here under observation and treatment for kala azar was 220, and for malaria, dysentery, and filariasis 247, besides 330 for other diseases; while the number of out-patients treated for kala azar was 1,251; for malaria, etc., 1,390; for leprosy, 245, and for other diseases 2,527.

For the treatment of leprosy a separate institution in affiliation with the School was approved, but owing to the dolorous opposition of residents in the locality (many of whom—such is "that strange prodigious creature man"—appear to be incipient lepers themselves) the design had to be abandoned. For the treatment of rabies a special Pasteur Institute, on the same footing as the hospital, is proposed and is likely to be realized.

A particular feature of the School is the "cool room" necessary for certain operations of the laboratory and always comfortable for work. Air, after being passed over the pipes of a refrigerating plant, is drawn into a room insulated by cork, the heated air being concurrently exhausted; and the apertures for ventilation are filled with cotton-wool to filter germs and dust. The room has been a success, notwithstanding forebodings, and its promising applications are unbounded.

In the field of original work the ideals of the School are deliberately restricted to the advancement of knowledge of the causation, diagnosis, treatment, and prevention of the momentous diseases of India, research of a purely "academic" kind being distinctly excluded. The limits are not narrow and the motive, being humanitarian rather than grossly utilitarian, is good; yet one cannot but think that it too much forgets the historic lesson that great advances in science have usually

been made by men who took little or no thought for the practical applications of the morrow, by men who, as HUXLEY said, "sometimes intentionally, much more often unintentionally, light upon something which proves to be of practical value." One cannot but think that a pure biologist with a particular affection for mycology and a vestal bio-chemist of purest ray serene might light upon something of practical value for tropical medicine. But in medicine we need not quarrel with ideals too intent on practical ends, and the Director of the School, at any rate, is profoundly imbued with the policy of giving every worker perfect intellectual freedom and the greatest latitude within the set limits, and he expresses small faith in catch-words and industrial metaphors, or for the mechanical efficiency of the drill-hall, in the affairs of the laboratory.

Owing to the numerical strength of the staff the individual teacher, as a rule, need not devote more than one day of each week to the actual teaching of the class, and this gives him plenty of opportunity for clinical study in the hospital as well as for original work. The outcome is to a considerable extent evident in 35 papers, covering a wide range of interest, two-thirds of which were published during the year in the *Indian Medical Gazette*. Most of these have been noticed in this Bulletin, so that all that is now necessary is to review, in the order presented, some of the noteworthy doings of the laboratories from which they issued.

Kala azar.—Experimental transmission to animals has not led to much; of 77 animals injected only 7 became infected, and 3 of these only transiently, and of 17 that received infective feeds only 1 took. A survey of Calcutta has revealed cases from most wards of the city outside the European areas. In the out-patient department 1,251 cases were treated, mostly with antimony tartrate. Eighty per cent. of in-patients discharged as cured were followed up and 5 of them were found to have relapsed. Results of treatment with Bayer 205 were very disappointing. Van Heyden 471 (metachlorparacetylaminophenyl stibiate) gave some strikingly good results, and van Heyden 661, though not so good as 471, has proved better than antimony tartrate. Urea stibamine did not give constantly good results. Experiments are being carried out with oral administration of antimony tartrate.

Hookworm.—A critical investigation of carbon tetrachloride confirmed the proposition that it is the most efficient drug known for hookworm (also that it is effective for threadworms, but of little or no use for other roundworms or for tapeworms). Though it is not detoxified if the liver be seriously damaged or disturbed, it does not in medicinal doses cause degeneration of the normal liver. If sprayed upon the mucous membrane of the trachea (as it might be if forced upon struggling children or if taken by patients liable to cough) it causes reflex stoppage of the heart. The previous year's experiments, showing that hookworm larvae in Bengal cannot live in ground exposed to sun during the hot season, were confirmed; on the other hand, ovulation appears to be greatest during the rainy season.

Cholera.—Two small epidemics in non-endemic areas were actually traced to their origination from Hindu pilgrims.

Leprosy.—The comparative efficacy of various oils has been tested; esters of linseed oil though superior to esters of coconut oil are not equal to esters of hydnocarpus. Injections of thymol dissolved in olive oil have shown promise, and without renal irritation. Solutions of trichloracetic acid applied to leprous lesions have done very great

benefit. Small doses of potassium iodide have stimulated reaction to small injections of esters. Simultaneously-combined treatments are recommended for cases intractable to one form of treatment. Attention to the general condition and hygienic environment is of great importance in all forms of specific treatment. Observations carried on in the out-patient department of skin diseases has led to the conclusion that fully 15 per cent. of the cases coming for diagnosis are leprosy, early cases of this disease not being generally recognized but being attributed by general practitioners to psoriasis, eczema, etc.

Filariasis.—A general survey has shown this disease to be widely prevalent in Bengal. The view that elephantiasis is a disease associated with long residence in badly infected areas is confirmed.

Tropical Medicine.—From this Department has emanated a series of papers (already noticed in this *Bulletin*) distinguished equally for comprehensive analysis and judicious synthesis, on epidemic dropsy and beriberi ; on the typhus group of fevers ; on the cognate relations of dengue, sandfly fever and other seasonal fevers of short duration ; and on dysenteric ascites. The survey of the distribution of the most important diseases of India has been continued also.

Skin disease.—To the surprising statement as to the frequency of leprosy in its most infective stage being overlooked as a mere eczematous eruption is added other evidence of the appalling ignorance of skin disease among general practitioners. An interesting group of cases of intense scleroderma of palms and soles supposed to be due to thyroid deficiency has yielded to dried extract of thyroid gland in large doses. Interesting cases of acute psoriasis giving a moderately positive WR are mentioned where the administration of a large dose of salvarsan has been followed by a general acute exfoliative dermatitis.

Protozoology.—The catholic spirit that animates the whole School is nowhere better illustrated than in the work of this Department. In addition to a considerable educational output of pure protozoology its tale includes a series of critical experimental investigations on the transmission of kala azar and yaws, on the treatment of malaria and amoebic dysentery, on the delusive nature of certain " leptospirae," and on the causation of the pernicious anaemia of pregnancy.

Pharmacology.—Some of the most interesting and suggestive work of this Department has been carried out in co-operation with the Department of pathology and bacteriology—work which may be called philosophical, without any disparagement of its experimental method and of its fundamentally practical bearing, on the influence of the substrate upon the action of drugs; for, as is most justly stated, it is useless to study bacterial toxins and other complex proteid poisons without knowing how the simpler inorganic bases act in the body. Much attention has also been given to clinical and chemical study of indigenous drugs—among them *Vitex peduncularis*, certain species of *berberry*, and *Peganum harmala*, the reputed value of which in the treatment of malaria was not confirmed. [It is to be hoped that in the trial of substitutes for quinine *Teucrium leucocladum*, a common herb of the North-Western frontier, may be included.]

Medical Entomology.—Besides educational routine, field observations of malarious tracts have been carried out and laboratory observations of various arthropods in their pathogenetic relations.

A. Alcock.

CHRISTOPHERS (S. R.). **What Disease costs India: Being a Statement of the Problem before Medical Research in India.**—*Indian Med. Gaz.* 1924. Apr. Vol. 59. No. 4. pp. 196–200.

The author of this thoughtful paper does not adopt the fashionable device of estimating in problematical sums of money the amount of India's loss by preventable disease. Far better; he produces from the latest census returns certain recorded facts of a high general death rate, of a heavy mortality from specified epidemics, and of an actual decrease of population, certain comparative forecasts of expectation of life, and certain reasonable estimates of a wide-spread physical infirmity from specific diseases; and from these he draws inferences, impressive because they can be followed and realized, of a loss of vital energy which must have enormous economic and financial and even political repercussions for India.

As regards death rates: in 1921 the total death rate for the whole of India was 30 per mille, ranging from 20 in Upper Burma and Madras (where, probably, registration is deficient) to 44 in the Central Provinces; in Great Britain in 1911–1915 it was 13·8 per mille. As regards expectation of life: the expectation during the first year of life is given in India as about 23 years, compared with about 44 years in Great Britain; at the age of five in India about 35 years, compared with about 54 years at the age of three in Great Britain; at the age of twenty in India about 27 years, compared with about 41 years in Great Britain; at the age of fifty in India about 14 years, compared with about 19 years in Great Britain. A high death rate may actually diminish the population: whereas in the decade 1901–11 the total population of India showed an increase of 6·4 per cent., in the decade 1911–21 it was only 1·2 per cent.—a difference not attributable to emigration or to a diminished birth rate; in the United Provinces (population 49 millions) the population decreased by 1·1 per cent. in 1901–11, and by 3·5 per cent. in 1911–21; and in a large area of the Punjab a population of 13 millions had decreased (1911–21) by 9·7 per cent.

Probably the principal cause of this increased death rate, or decreased expectation of life, is the persistence in India of great epidemics of diseases that have practically disappeared from Western Europe—*e.g.*, malaria, cholera, plague, relapsing fever. Undoubtedly much fever of other kinds has been confounded with malaria; but as an example of the effects of a great epidemic of the kind meant, the outbreak of malaria in the Punjab, in 1908, is given, when in a population of about 20 millions inhabiting an area of 5,000 to 6,000 square miles about 250,000 deaths from this disease occurred in the course of three months.

Besides mortality there has to be considered the general infirmity and physical incapacity entailed by epidemic diseases and by the widely endemic diseases of India—anaemia, ancylostomiasis, dysentery, eye-diseases, filariasis, leprosy, parasitic skin diseases, tuberculosis, and by deficiency diseases. All this, though it cannot be expressed in terms of money, represents a loss of economic energy. It is an obstruction to the main business of agriculture, retards industrial expansion, procrastinates trade and administration, and gives the country an expensive sanitary ill-repute.

How can this enormous waste of energy through premature death and preventable sickness be stemmed? Not by Government, however humane and anxious, unless fully and accurately informed upon the

causation and treatment and prevention of disease ; and this information can be obtained only by research.

On the subject of medical research the experienced author expresses some opinions that deserve respect. Research cannot be purchased in the laboratories of Europe ; it must be conducted on the spot—in India. Research is not like an expedition that needs a single control to bring it to a successful end within a time-limit ; it must go on and on, gathering volume, and, if the right spirit be there, overlapping can do no harm.

A. A.

HUCK (John G.). **Sickle Cell Anaemia.**—*Bull. Johns Hopkins Hosp.* 1923. Oct. Vol. 34. No. 392. pp. 335–344. With 5 plates & 2 charts. [7 refs.]

This is an unusually finished study of the interesting form of anaemia that takes its name from the peculiar sickle or crescent shapes assumed by the red corpuscles *in vitro*. Hitherto this disease has been thought rare, only 4 cases having been recorded (see this *Bulletin*, Vol. 7, p. 329, and Vol. 20, p. 670) ; we now learn that it is fairly common, though, up to present observation, only in the negro race.

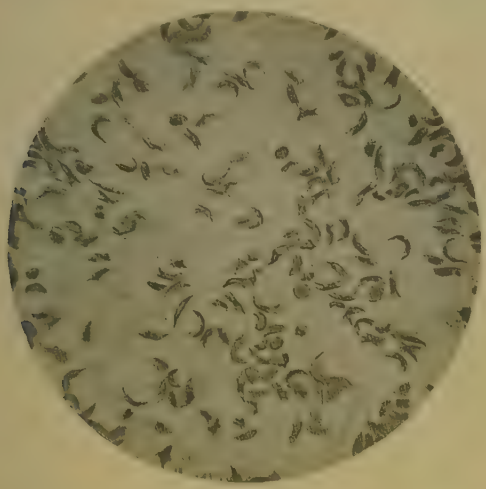
The fruitful investigations under review are founded on material afforded by 20 cases, of which 2 are fully reported and 12 briefly abstracted. They include two family-trees, each extending to three generations, from which it appears that the peculiar property of the red blood corpuscles is, like haemophilia, a Mendelian inheritance, but, unlike haemophilia, not limited to one sex. In the light of this interesting discovery the author very justly dismisses the conjecture that the disease is any manifestation of syphilis or of tubercle.

Symptoms of the disease may be absent, mild, or severe. The first two classes of cases are not likely to come to notice, because as the symptoms are merely weakness and lassitude they soon pass away after a little rest in bed. In the severe cases, besides weakness, lassitude and all the usual accompaniments of anaemia, there are stiffness and pains in muscles, simulating "rheumatism" ; often a sharp pain in the epigastrium, particularly after eating ; and ulcers on the legs, which may have been produced by any slight injury ; fever usually exists, but rarely goes above 101° F. with morning remissions, and night sweats sometimes occur ; the course of the illness consists of a series of remissions and relapses.

The physical examination shows greenish-yellow sclerae, pale mucosae and often slight oedema of ankles ; slight general gland enlargement ; liver palpable but not the spleen ; heart usually slightly enlarged to the left, a soft generalized systolic murmur, and the second pulmonary sound accented, pulse rapid and variable, blood-pressure low ; genitalia infantile ; an ulcer (or scars) on legs or feet. The urine is of low specific gravity (1010–1012), and albumin from a trace to 2 *plus*, and a few granular casts may be found. Stools, WR, blood-culture, chemical examination of blood, transmission experiments, all negative.

The blood phenomena are given in detail, along with particulars of controlled experiments and individual charts. The blood clots normally. The red corpuscles number from 1,500,000 to 4,000,000 ; haemoglobin 30 to 63 per cent. An occasional sickle-shaped cell may be seen in fresh drawn blood, but the picture seen in the accompanying illustration was made from a sealed film 48 hours old. Stained films show—more abundantly in relapses—the characteristic sickles or oat-shaped forms. Haematoblasts of all varieties—but mostly normoblasts—may be found. The leucocytes are increased to 10 up to 20 thousand, but the differential formula shows nothing characteristic. The polynuclears (usually neutrophile) are generally increased, or the small lymphocytes may be. Neutrophile myelocytes (from 1 to 3, occasionally up to 7 per cent.) form the

majority of abnormal white cells, but are not at all constantly found. Platelets are increased 300,000 to 500,000. In fresh preparations large endothelial mononuclears may be seen engulfing red corpuscles. Experiments showed that the sickling of the red corpuscles is due to something inherent in themselves and not to any property of the serum.



Sickle Cells. Fresh blood preparation after 48 hours.

[Reproduced by permission from *Bulletin of the Johns Hopkins Hospital*. 1923. Oct.]

The pathological appearances and histology of the leg-ulcers is fully described. They have the round, punched, indurated appearance of syphilitic ulcers.

Prognosis is unfavourable only in severe forms of the disease, on account of the susceptibility to intercurrent infections, especially pneumonia and tonsilitis.

A. A.

JAMISON (S. Chaille). **Sickle Cell Anaemia (Report of a Case).**—*New Orleans Med. & Surg. Jl.* 1924. Feb. Vol. 76. No. 8. pp. 378–379.

The patient in this case was a coloured girl of 11 years, with a history of healthy babyhood, a long and severe attack of "yellow jaundice" between her first and second year, and brief and mild storms of jaundice and vomiting nearly every month of her life afterwards, and life long fever and "dumb chills." When examined she was under-developed, but fairly well nourished; the buccal mucosa was pale, the tonsils enlarged and exuding pus, the lymphatic glands everywhere moderately enlarged, and the liver and spleen palpable. During four months' stay in hospital the temperature ranged from normal to 101° F., the haemoglobin ranged from 30 to 35 per cent., and the most remarkable feature of the blood picture was the shape of the red corpuscles "five or six of the corpuscles seen in every field of the oil immersion were crescentic, sickle-shaped, or long and narrow and pointed at both ends." Unfortunately, the patient was removed from hospital. The author thinks the case must have been inherited syphilis.

A. A.

CALMETTE (A.). **Sur l'utilisation des singes en médecine expérimentale. Le Laboratoire Pasteur de Kindia (Guinée Française).**—*Bull. Soc. Path. Exot.* 1924. Jan. 9. Vol. 17. No. 1. pp. 10–19. With 1 fig.

There are many diseases—those instanced in this almost profanely fascinating paper are measles, scarlatina, typhus, yellow-fever, influenza, trachoma, yaws, goundou, leishmaniasis, and human trypanosomiasis —that are not transmissible to the inferior creation utilized in the routine of the laboratory, and the rational study of which must therefore be abandoned altogether unless we can command the assistance of our nearer relatives, the apes and monkeys. But as large numbers and a constant supply will be required, apes and monkeys must be recruited, nurtured, and hygienically regimented in the colonies. We learn here that the Pasteur Institute has already made a beginning in this business. In the island of Los, near Konakri in French Guinea, the Institute has secured a large, well-watered, woody and fertile tract of land near a forest inhabited by chimpanzees and several species of monkeys, and is constructing there residences and shady parks for these animals, and accommodation for the native Africans who are to attend upon them, for the scientific men and apparatus competent to utilize them for study, and for the Director of the whole community ; nor among other things are infirmaries for the sick Primates forgotten. Chimpanzees are the most desirable animals. When captured young and treated well they are like children. Besides being the most suitable of our relatives for pathological study, they may be educated and so may furnish material for experimental psychology. When the young males grow up and perhaps become intractable they at least have glands that can be used for the rejuvenation of old men. Three species of baboons are also mentioned : they are all ferocious, clamorous, brazen-faced, rude, unmanageable animals, "but they are very intelligent." Three species of Cercopithecus also live well in captivity. All things relating to the raising, treatment and maintenance of health of monkeys are discussed and explained in this paper. In dealing with experimentation it is pointed out that the normal temperature varies according to species, so that the individual temperature of each subject destined for experiment should be determined beforehand. Age is also a factor of importance in experimentation ; sometimes (as with typhus) young monkeys are much less susceptible than adults.

Doubtless "monkeys represent for microbiologists experimental material of incomparable opulence and pliability."

A. A.

LEVADITI (C.) & NICOLAU (S.). **Le mécanisme d'action des dérivés bismuthiques dans les trypanosomiases et les spirilloses.**—*Ann. Inst. Pasteur.* 1924. Mar. Vol. 38. No. 3. pp. 179–239. With 13 text figs. [18 refs.]

The conception of the therapeutic effect of a given drug being dependent upon modifications undergone by that drug within the organism is familiar, and has led these authors to conceive of obtaining that therapeutic effect *in vitro* by subjecting the drug to the action of fresh animal tissues at body-temperature. In this fascinating paper, where the results of seventy varied experiments are severally summarized and tabulated, they show how the bi-compounds of bismuth, which, as such, have not, in moderate concentrations, any destructive effect

upon trypanosomes and spirilla *in vitro*, become deadly to those organisms *in vitro* after they have been acted upon by fragments or extracts of fresh animal tissue (liver, lung, brain, suprarenals, ovary, spleen, thymus, muscle) at body temperature. Hepatized bismuth, for instance, destroys trypanosomes in a dose of 0·05 cc. and spirilla in a dose of 0·05 cc., while cerebrized bismuth destroys trypanosomes in a dose of 0·005 cc. This conversion, or activation, of bi-compounds of bismuth cannot be brought about in this way, however, by whole blood, washed erythrocytes, serum, egg-albumin, yolk, yeast, or nucleinic acid. As it can be effected only by fresh tissues and tissue-extracts, the authors, in strange materialistic fashion, postulate a "bismogene" or "substance transformatrice" in the tissues, by which the inert bismuth is converted into the active *Bismoxyl*. The properties of "bismogene," and the ways of preparation and the nature and properties and therapeutic action of Bismoxyl are described at length in a paper which itself is a long and lucid summary that can be mutilated but not abridged.

A. A.

THOMPSON (Joseph C.). **"Tropical Neurasthenia": A Deprivation Psychoneurosis.**—*Milit. Surgeon.* 1924. Mar. Vol. 54. No. 3. pp. 319–327.

This paper deals with "Guamitis" or tropical asthenia as illustrated among white men stationed in Guam, one of the islands of the Marianne or Ladrones group. The author endeavours to analyse the possible factors of a "pyschic atmosphere that beggars description." As potential factors climate, food, cost of living, influence of Governor, must be eliminated: the climate of Guam is on a par with the vaunted health-resorts of Europe, the food may not be that of the highest realms of gastronomy, but it is good and varied, and in some particulars luscious, and one can live there better and more economically than in any city of the U.S.A., and finally the thing goes on irrespective of the individual personality of a series of governors. So the author has to fall back on ennui—the ennui of the Caucasian deprived of all the excitements of "civilisation," who unable to fly from his land of exile makes all sorts of extraordinary flights from himself [oblivious of the Horatian admonition "Patriae quis exsul sequoque fugit"].

A. A.

GREENWOOD, with a Chapter by ARKWRIGHT (J. A.). **The Life and Scientific Work of Arthur William Bacot.**—*Jl. of Hyg.* 1924. Mar. Vol. 22. No. 3. pp. 265–304. With 1 plate. [106 refs.]

An untrained man who can work for his daily bread in a City counting-house from boyhood to the age of 43, and then can take his place in the world as a master of experimental biology must be a genius. Such a man, a born naturalist of true Darwinian fibre—though not, of course, of that Olympian stature and plenitude—is here made known to us in BACOT.

While toiling for 27 years in the City, BACOT occupied himself at home with living things, intent on Lepidoptera, their life history, genetics, and general bionomy, and acquiring an exquisite, almost prophetic, skill in dealing with live insects. At the age of 45 the Fates took him from the counting-house, set him in the Lister Institute, and ordained and beneficed him there as entomologist in the service of Hygiea. To the ordinary man it is detriment to have his hobby

turned into his livelihood; the fond exacting mistress of desire is too like to become the *placens uxor* of easy obeisance; but BACOT was not in the roll of common men. In the free atmosphere of the Lister Institute he set himself at once to study rat-fleas in their bearings on the epidemiology of plague, and in giving precision to the whole history of these insects he revealed the suggestive fact of their protracted survival under adverse circumstances in a resting-larva-cocoon stage, and (in union with C. J. MARTIN) discovered the phenomena of plague-infection by the bite of the infected choked flea. In 1914 he was deputed to West Africa with the Yellow Fever Commission, and in the course of his experiments there discovered the favourable influence of befouled water on the hatching of the eggs of *Stegomyia fasciata.* During the war he worked unremittingly upon lice—their life-history and control, and their exact relations with Rickettsia bodies in trench fever; and he had these delicate insects so schooled and regimented that for all experimental purposes he could produce them according to age-specification like market stuff. He also experimented with the bed-bug in relation to typhus fever, and incidentally discovered the Rickettsia bodies normally inherent in all stages of that insect. In 1920 he joined as entomologist the U.S. Red Cross expedition to Poland for the study of typhus, and added to his experience by getting trench fever, and in pleasanter ways. On his return to England he continued his study of Rickettsia bodies in lice and in the sheep-ked; among other things he was unable by experiment to corroborate the suggestion that the typhus virus is identical with the O form of *Bacillus proteus* X 19. In November 1921 he joined a party to investigate typhus in Egypt, and there early in the following year, in handling infected lice and their excreta, he must have infected himself with that disease. He became ill, at Cairo, on the 26th March, but would not stop work at once, and on the 12th April he died, mourned even by those who knew him only by his work. A. A.

WOODCOCK (H. M.). **On the Modes of Production of "Rickettsia"-Bodies in the Louse.**—*Jl. Roy. Army Med. Corps.* 1924. Feb. & Mar. Vol. 42. Nos. 2 & 3. pp. 121–131; 175–186: With 23 text figs. [16 refs.]

The author's interesting speculations on haematophagy, or abnormal digestion of red corpuscles by fixed tissue-cells deranged by a pathological ferment (*Bulletin*, Vol. 19, p. 620), and his theory of the origin of Rickettsia bodies sometimes from the disintegration of nuclear material, sometimes from haematophagy or haematoboly (Vol. 20, p. 677) are here carried a stage further, though they do not bring us any nearer to the unknown something that rouses a dormant "autolytic" ferment to a furious pathological outburst. The present paper, though it contains some evidence (from smears) that the epithelial cells of the gut may digest red corpuscles (normal haematoboly) in the ordinary healthy louse, is chiefly occupied with evidence that bodies indistinguishable from Rickettsia in size and form and colour and also in their constant clumping are produced in lice as a normal process, chiefly in the lumen of the gut and mainly by the destruction of the haemoglobin of the food, but perhaps also by the disintegration of the nuclei of desquamated cells from the wall of the gut. The author describes all gradations between granules and forms that resemble Rickettsia in everything but colour and persistence of iron and typical lilac-red Rickettsia not giving the iron reaction, and handles his argument with convincing skill. But although he concludes that Rickettsia bodies are formed in healthy lice as a normal process the author does not dispute an interdependence of some sort between Rickettsia and certain

specified diseases. His argument is that in the healthy (normal) louse, where the haemoglobin is dealt with almost exclusively in the lumen of the gut (extracellular) the Rickettsia bodies originate from pigmented detritus that has lost its iron, and not from the quite subordinate process of haematophagy (intracellular digestion); and that it is only under the influence of a pathogenetic ferment that this latter process becomes overwhelmingly magnified. Under this influence the mild subordinate intracellular process becomes an overpowering haematoboly, leading to the death of the cells and the disintegration of their nuclei with the extensive formation of Rickettsia bodies from the nuclear detritus.

A. A.

PIJPER (Adrianus). **Bronchomoniliasis and Monilia-Fungi in Sputum.** —*Med. Jl. S. Africa.* 1923. Nov. Vol. 19. No. 4. pp. 101–111. With 5 figs. [30 refs.]

In 67 consecutive examinations of the sputum of suspected cases of pulmonary tuberculosis in South Africa, fungi of the genus *Monilia* (Gmelin non Persoon) were found in 36 cases. Seven of these could not easily have escaped detection, owing to the large number of fungal elements present. Nine more revealed the presence of irregularly scattered budding cells in many fields from direct smears. The Unna-Pappenheim method for staining the bacillus Ducrey (KOLLE & WASSERMANN. Handb. Pathogen. Mikroorgan., V, p. 1227) proved an excellent differential stain for the fungi, while cultures permitting of their identification as Monilia were readily obtained on an acid medium consisting of ordinary broth made up to PH 2 by 1/10 n. hydrochloric acid. In 20 other cases it was difficult to find microscopic evidence of the presence of fungi, but they were isolated in pure culture on the medium referred to. Their free growth in such a medium is correlated with the reported frequency of these fungi in ulcer of the stomach, where the gastric juice becomes exceedingly acid and would readily allow of growth of Monilias reaching the stomach from the throat. In three only of the whole series were tubercle bacilli found. Though Monilias occur at times in milk and in human faeces, attempts to establish their presence in the air of the laboratory failed. All the cultures examined grow better at blood heat than at room temperature and this fact is regarded as telling in favour of their pathogenicity.

Several of the patients showed persistent cough, much sputum, emaciation, loss of appetite, loss of energy, sweating, and an occasional haemorrhage from the lung. The rest had usually little more than a chronic cough and troublesome sputum. In ordinary clinical practice the author contends that only the relatively few cases that showed plentiful fungal elements in the sputum would be classed as bronchomoniliasis, yet the fungi in these cases were not different from those found only by special methods. More than 50 per cent. of these cases of chronic cough and other symptoms, such as led to the suspicion of tuberculosis, were associated with the presence of Monilia. The author claims therefore that either bronchomoniliasis does not exist, or the majority of chronic affections of the respiratory organs must be called bronchomoniliasis.

Inoculation into rabbits gave positive results in most cases, direct intra-tracheal inoculation causing the formation of lung nodules in 16 out of 43 cases (some from milk giving positive results) while emaciation was caused by small doses in 22 out of 43 isolations inoculated intravenously. In all cases it proved possible to kill the

rabbit by a sufficiently large intravenous inoculation which, if not too large, caused death by septicaemia within a week. The reputation of potassium iodide in chronic respiratory trouble is suggested to be due to the known effect of iodine in cases of fungal infection. Nevertheless, pathogenicity to rabbits was found to have no relation to the origin or varietal characters of the fungi, and it was impossible to predict the virulence to rabbits of any strain. Bronchomoniliasis is not a clinical entity: the diagnosis cannot be made at the bedside. The author doubts whether it can even be called a pathological entity, since Monilia is present in so many sputa, many of which contain other organisms also, and it is not possible to correlate abundance of fungal elements with severity of symptoms nor either with pathogenicity to rabbits.

The biochemical reactions of 43 isolations of Monilia (including the 36 referred to above) are given. Three serological groups were differentiated by complement fixation tests. Biochemically the strains fell in part into some of the ten groups recognised by CASTELLANI from their fermentative activities, but eleven isolations did not agree with any of these groups. Culturally the most important character was the appearance of gelatine stab cultures, which served to differentiate two main groups, one having the appearance of an inverted fir tree and the other resembling an ostrich feather. Little is said regarding the morphology of the fungi, except that eleven had elongated spores and the rest oval. All agreed with the definition of the genus *Monilia* given by VUILLEMIN, multiplying by means of "thallospores" consisting of swollen segments set free from the thallus and budding in basifugal progression like yeasts. This is, of course, not such a definition as would be ordinarily recognised by mycologists.

Vaccine treatment was tried with autogenous vaccines in 16 of the cases, but proved satisfactory in a few instances only.

The problem of the frequency, of the existence even, of bronchomoniliasis as a human disease is clearly posed in this paper. Its solution is not advanced. Mere frequency of association of an organism with a disease does not signify etiological connexion and is often a snare. The failure to correlate the intensity of the symptoms with the abundance of fungal elements and the absence of post-mortem evidence are serious justifications for the author's caution. Working on circumstantial evidence alone the series of examinations of sputum from healthy as well as from diseased cases requires to be greatly extended. The author has at least established the high frequency of occurrence of Monilia fungi in sputum and made more than ever urgent the recognition of the possible importance of the bronchomycoses generally.

E. J. Butler.

OTA (Masao). **Essai de classification des blastomycètes pathogènes.**—*Ann. Parasit. Humaine et Comparée.* Paris. 1924. Jan. Vol. 2. No. 1. pp. 34–61. With 12 figs. [17 refs.]

During the last two years the author has studied some 40 species [or strains] of supposedly pathogenic fungi belonging to the so-called "blastomycetes." The ascigerous forms encountered were all referable to the genus *Debaryomyces*, five species of which were discussed in an earlier memoir [Ota, *Ann. de parasitol.*, I, pp. 124–136, 1923], while a sixth, *D. Burnieri* n. sp., is now described and figured. The term "blastomycete" in current usage is considered to be badly defined and is limited in the present study to the forms devoid of ascospores

and propagating by budding. To cover these forms only two genera, *Cryptococcus* and *Monilia*, are recognised, a crowd of other genera at present included amongst the pathogenic blastomycetes being discarded as properly belonging to one or other of these two. Further, it is admitted that the two genera maintained are joined by transitional forms and that their differentiation is at times very uncertain. *Cryptococcus* also is regarded as probably being merely *Saccharomyces* which has lost the facility for forming ascospores [what looks like typical conjugation is shown in a *Cryptococcus* in fig. 4], and it is evident that morphologically the distinction between the three genera is weak. It should be borne in mind that the genus *Monilia* (Gmelin) of the author is not that ordinarily known by this name amongst mycologists, the latter probably having no affinity to the yeasts.

In each case the morphology and cultural characters of the organisms are described and each is figured. Little information is given as to their pathogenicity, but the source of the culture is indicated. In many cases one would like to know what real evidence there is that they are not ordinary secondary saprophytes. Except where a specific name has already been given by previous workers, the forms are not named beyond the genus. On the whole, one is impressed by the author's commendable restraint and genuine desire to base his classification on recognizable characters of morphological worth and so to simplify the turgid classifications of the mycoses found in too many of the current works on parasitology.

E. J. Butler.

VERHOEF (A. W.). **Vergiftiging door Ketjoeboeng** (*Datura fastuosa*). [Intoxication by Ketjoeboeng (*Datura fastuosa*).]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1924. Vol. 64. No. 2. pp. 304–307.

A case is quoted of criminal poisoning with *Datura fastuosa*, which plant appears to be well known to the natives of the Malay Archipelago. The principal symptoms were excitation, loss of orientation, large pupils, dryness of the mouth. The patient recovered within a day. From the remainder of the chocolate in which the poison was administered a mydriatic alkaloid, probably scopolamine, could be obtained.

W. J. Bais.

KUIJER (A.). **Neosalvarsaan-intoxicaties.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1924. Vol. 64. No. 2. pp. 339–351.

Kuijer describes several cases of neosalvarsan-poisoning, which he observed during a campaign against yaws in Java. The scarlatiniform exanthema is the lightest type. More serious reactions were the dermatitis exfoliativa generalis and haemorrhagic encephalitis, from each of which types of intoxication a patient died. The dose of neosalvarsan, previously 300–900 mgm., was later on decreased to mostly 4 doses of 400 mgm. in adult Javanese. The number of intoxications diminished.

W. J. Bais.

KIEWIET DE JONGE (G. W.). **De doodsoorzaken bij de verzekerden der N. I. Levensverzekering-en Lijfrentemaatschappij.** [The Causes of Death in the Lives Insured with the Dutch East Indian Life Insurance Company.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1924. Vol. 64. No. 2. pp. 205–227. 1 chart in text. [6 refs.]

The author analyses the causes of death reported of 1,766 European and Eurasian men, 183 Chinamen and 74 native men. The figures

do not allow much comparison, and therefore are mostly not of general interest. Yet some of the conclusions are worth while mentioning.

Enteric was an important cause of death (6·9 per cent. of the total 1912–22). The importance of vaccination is emphasized.

Malaria is gradually becoming of less importance in this respect (4·1 per cent. of total mortality, 1891–1911, 2·3 per cent., 1912–1922).

The mortality from smallpox is low, but still higher than in the army, where revaccination is more efficiently carried out.

Influenza did not cause a mortality of any importance during the epidemic of 1889 and following years. In 1918, however, it was very serious and it has since continued causing a few deaths.

The cholera mortality has much decreased, which the author ascribes chiefly to the vaccination which is very popular in times of epidemics.

The mortality from tuberculosis is lower than in Europe, but the Europeans in the East are a selected material in this respect. Surgical tuberculosis is less common than it is in Europe.

Cirrhosis of the liver is less prevalent among the causes of death than one would expect in a tropical country (0·7 per cent. of total mortality against 1·2 per cent. in European life insurance reports).

Bright's disease is a common cause of death (6 per cent.).

Suicide is common and appears to be on the increase.

Abscess of the liver is becoming a less important cause of death with the decreasing prevalence of dysentery.

Sunstroke only in one case was the cause of death ; it is rare in the D.E.I.

Aneurysma aortae was the cause of death in 2 per cent. of the cases, which points to a far greater occurrence of this affection than in Europe.

A longer expectation of life is justified in Europeans and Eurasians than in natives or Chinamen.

W. J. Bais.

KEUKENSCHRIJVER (N. C.). **De afmetingen van het bekken van de Javaanschevrouw.** [The Measurements of the Pelvis of the Javanese Woman.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1924. Vol. 64. No. 2. pp. 277–282. With 4 charts & 1 folding plate.

Founded upon the measurements taken in 1,000 living Javanese women, 130 post mortems and 10 cases in which the bony pelvis was removed from the dead body, the author found that the transversal diameter is smaller than in European women, whilst the conjugata vera is about the same in both races ; the pelvis is more circular in shape. In 1 out of 6 cases the pelvis is of round or sagittal oval type. On the average there is a greater difference between the conjugata vera and inclinata than there is in European women. This difference is caused by the larger conjugata inclinata. The 25th vertebra is in a transitional stage. It may have the lumbar type or be united with the sacrum and intermediate types may occur. In Javanese the sacral fusion of the 6th lumbar vertebra is not yet complete. The pelvis is an assimilation type and accordingly in a more primitive phyletic stage of development.

W. J. Bais.

REVIEWS AND NOTICES.

LE DANTEC (A.). **Précis de pathologie exotique (Maladies des pays chauds et des pays froids).** In 2 volumes. 4th Edition. Revised. Vol. 1. pp. iii + 942 and Vol. 2. 1232 pp. With 286 figs. & 3 coloured plates. 1924. Paris; Librairie Octave Doin, Gaston Doin, Éditeur, 8. Place de l'Odéon. (Collection Testut.) [Price 75 francs.]

Dr. Le Dantec uses the word pathology in its broader original sense of the science of disease, and his book is in fact a treatise on the diseases of warm and very cold climates. The three previous editions were published before the war, and a publisher's notice states that the work has now been brought up to date and certain chapters rewritten.

In the first part of the book the subject of climatology is considered at some length; then follows an account of tropical diseases, which is on the usual lines. There is a long chapter on malaria, concerning which the author holds some decidedly unorthodox views. Cholera is disposed of rather summarily, and the section on the treatment of this disease does not do full justice to modern work on the subject. The article on sprue, too, is somewhat inadequate. The third part of the book deals with the modifications of type of some cosmopolitan diseases which are often seen in warm countries. The last forty pages are devoted to the diseases due to cold, or which are met with in high latitudes.

The book is an interesting one, and is very well written. The author brings an original mind to bear upon his subject; and, although some of his opinions are not generally accepted, they certainly deserve careful attention.

H. J. Walton.

URRIOLA (Ciro Luis). **La valeur diagnostique du pigment hématique dans la malaria.**—pp. viii + 97. With 25 figs. 17 charts & 1 plate. 1924. Paris: Vigot Frères, Éditeurs, 23 rue de l'École-de-Médecine. [Price 12 francs.]

A medical man, accomplished, versatile, a post-graduate student at Paris, London and Dublin, a linguist, translator of several of Macaulay's works, a collaborator in CHARCOT's foundation the *Archives de Neurologie*, Vice-President and finally acting President of the Republic of Panama—such was Ciro Luis Urriola. He held withal the conviction that he had discerned in serum and urine special pigments diagnostic of malaria, a matter which lay so near his heart that this posthumous publication has been selected by his widow as a fitting tribute to his memory.

Seeing that examination of cutaneous blood may fail to detect plasmodia when they are certainly present in the circulation Urriola was delighted when satisfied that by his detection of "haematic pigments" in serum and urine he could infallibly detect malaria, using the following technique. Urine is centrifuged for five minutes (rate unstated), after which, in a drop removed from the *middle* layers, are found floating characteristic coal-black pigment as very fine grains loosely aggregated in bands, as fine flocculi, as large polymorphous masses, and within hyaline plates. In the sediment are found yellow pigment as fine grains, as grains or masses isolated or grouped, and as drops; and blue pigment, rare, nearly always in isolated masses or included in hyaline bodies.

Accepting these pigments as malarial, their widespread presence implicates as malarial affections, fevers entirely resistant to quinine, haemoptysis, pneumonia, orchitis, haemoglobinuria, sensations of heat and cold, oedema of various parts, elephantiasis, abdominal pain, repeated abortion, beriberi.

Is this logical superstructure built on firm foundations? What evidence,

in other words, is offered that these pigments are malarial? Parasites were detected in none of the 115 cases quoted evidentially. Proof of the association of these pigments with parasites and their absence in cases where malaria could be excluded is not tendered.

The last chapter describes how, using a seven per cent. solution of chlorate of potash, or a mixture of this and sea water, Urriola observed in blood, whether malarial or not is unstated, the development of crescents and of definite ciliated organisms, the multiplication of leucocytes by fission again with the formation of crescents. In a mixture of white of egg and gum-arabic giant cells arose, giving rise by division to daughter cells, which might be like the parent, might be provided with cilia or with flagella, or might be crescents. "Dans ce cas, le fameux aphorisme de Virchow *omnis cellula e cellula* paraît en défaut." To the possibility of, or to any means used to avoid, contamination of the media by free-living organisms no reference is made.

Clayton Lane.

FRASER (H.) [M.D., D.P.H., Deputy Commissioner of Medical Services, Ministry of Pensions; formerly Director, Institute for Medical Research, F.M.S.] & STANTON (A. T.) [M.D., M.R.C.P., D.P.H., Director of Govt. Laboratories, F.M.S.,; formerly Bacteriologist, Inst. Med. Res. F.M.S.]. **Collected Papers on Beri-Beri.**—*Studies from the Institute for Med. Res. Federated Malay States. No.* 17. pp. vi + 103. With 7 plates. 1924. London: John Bale, Sons & Danielsson, Ltd., 83–91, Great Titchfield Street, W. 1. [Price 7s. 6d.]

The ten papers here conveniently collected made their several first appearances in the ten years 1909–1918. Four of them—published in 1909, 1910, and 1911—contain the detailed history of the authors' classical researches into the causation of beriberi. The conclusions originally drawn by the authors from these researches—namely, that beriberi is a disorder of nutrition incident on a staple diet of rice that has been deprived of vitalising essentials by excessive process of milling and polishing—have received, and, indeed, have commanded, almost universal acceptance; though whether they contain the whole and final and exclusive truth of the matter has been questioned by MEGAW, who recently has put some sparks of light (and perhaps of life) into the spoilt-rice-toxin theory of BRADDON, The question may perhaps be one for clinical experts with their definitions and classifications; but whatever the upshot, the work re-introduced in these collected papers has a permanent value and repute as being one of the earliest and most influential experimental contributions to the development of the vitamin concept.

Numerous verbal changes have been made in the reprinted papers, but the sense has not been altered.

A. Alcock.

MANSON-BAHR (Felipe H.). **Enfermedades Tropicales. Traducción Española de la séptima edición Inglesa.**—pp. x. + 802. With 21 coloured and 6 black-and-white plates, 404 text figs. & 31 charts. 1924. Barcelona: Salvat Editores, S.A. 41, Calle de Mallorca 49.

This is a well-presented Spanish edition, with all the plates and the many text-figures admirably reproduced, of the seventh edition of MANSON'S classical text-book of Tropical Diseases edited by Dr. Manson-Bahr, which was reviewed in Vol. 17, p. 342, of this *Bulletin*. In this new appearance in a becoming dress the book is assured of an appreciative reception.

A. Alcock.